

SOUTH AMERICAN HANDBOOKS

NORTH BRAZIL

E. C. BULEY

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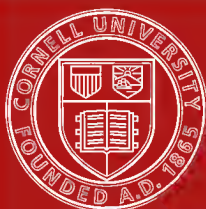
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NORTH BRAZIL



SOUTH AMERICAN HANDBOOKS

NORTH BRAZIL

PHYSICAL FEATURES, NATURAL RESOURCES,
MEANS OF COMMUNICATION, MANUFACTURES
AND INDUSTRIAL DEVELOPMENT

BY

E. C. BULEY



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NORTH BRAZIL

CHAPTER I

GEOGRAPHY AND PHYSICAL FEATURES

BRAZIL is situated between $5^{\circ} 10'$ of lat. N. and $33^{\circ} 45'$ of lat. S., and between the degrees of longitude $8^{\circ} 25'$ E. and $30^{\circ} 58' 38''$ W. of the meridian of Rio de Janeiro. Its extreme length from north to south is 2,750 miles, and from east to west 2,562 miles; with the exception of the three States of Paraná, Santa Catharina, and Rio Grande do Sul, the whole of Brazil is within the tropics. The area of Brazil is 3,329,365 square miles.

It is bounded on the north by the Atlantic Ocean, the Guianas, Venezuela, and Colombia; on the east by the Atlantic Ocean; on the south by the Republics of Uruguay and Argentina; and on the west by the Republics of Colombia, Peru, Bolivia, Paraguay, and Argentina.

The total length of the Brazilian coast-line is 4,140 miles.

The area of North and Central Brazil is 2,739,938 square miles, or nearly 80 per cent. of the whole country. The whole of this area, with the exception of a small part of the Central States of Matto Grosso and Goyaz, lies within the parallels of $5^{\circ} 10'$ N. and 15° S., and it includes the greatest width of Brazil.

For the purposes of description, this area may be conveniently divided into four zones: The Amazonian

valley ; the coastal belt ; the highlands of the Coastal States ; and the highlands of the Central States.

The valley of the Amazon is the greatest river valley in the world, its area being estimated at over 2,000,000 square miles. The greater part of this lies outside Brazilian territory, but the actual course of the stream and its affluents lies mainly in Brazil. The Amazonian valley and the coastal strip are, broadly speaking, the only areas of Brazil, with an elevation of less than 1,000 ft. above sea-level.

The extent and the luxuriance of the tropical forests that clothe practically the whole of the basin of the Amazon, have formed the subject of glowing descriptions written by travellers who have made the journey inland on the stream of the great river itself. The water's edge is marked by a wall of foliage that appears impenetrable. It consists of great trees of innumerable varieties, for in the Amazonian "selvas" the species repeat themselves at infrequent intervals. These trees are laced together by lianas of all conceivable thicknesses, hanging from the very summit of the tallest trees down to the water's edge. Here and there are little groups of graceful palms, infinite in their variety as the forest trees themselves.

The same sights meet the eye of him who branches off the main stream up one of the many tributaries, great or small, which empty themselves into the chief current. Thick forest, tropical palms and undergrowth, and a lacework of creepers of all kinds form a wall of forest along the course of every stream. Penetrate but a little way from the stream itself, and the forest preserves the

same characteristics ; the same variety of species, the same density of upper and under growth.

Near the stream beds much of these selvas is flooded in the rainy season, which lasts for nearly six months of the year. On the higher ground, back from the water-courses, the vegetation differs only in being even more luxuriant and persistent than that on the flooded areas. The "selvas" remain to-day practically as undisturbed as when they were only inhabited by the tribes of Indians who still know more of their secrets than any white man. No roads have been cut through them ; and but for the exploitation of their wealth of rubber-yielding trees, no attempt has been made to take advantage of the riches they hold.

Central Brazil shares yet another river valley, only less in extent than that of the Amazon itself. This is the valley of the Paraguay, a river which forms the boundary between the State of Matto Grosso and the southern Republics of South America. Here are vast areas of low-lying ground along the river bed, which are flooded for hundreds of square miles when the rainy season arrives. The ground itself is not permeable and the current of the stream is a sluggish one, so that these floods are protracted. The grass grows above the water, which is nowhere very deep, and these water meadows form the finest pastoral area in Central Brazil.

The coastal area of Brazil presents the same characteristics along the whole of its extent. It is a low-lying sandy tract, presenting a monotonous unbroken line of sandy shore and overgrown swamp. Along the edge grow the coco-nut palms in groves, a source of

future wealth to the Northern Brazilians. The sandy slopes, away to the ranges, are clad with dense and unwholesome tropical vegetation. Here and there a river forces its way through, the dry season leaving its bed often a series of disconnected pools. The shore is fringed by a coral reef, dangerous to navigation, except where some stream of greater volume than usual has broken a passage through the reef and made way for the shipping. Wherever that has occurred, a port has been made; for the means of communication between the scattered settlements of Brazil in the Colonial days was by sea only, and for safety's sake as many ports and calling places as possible were instituted. These ports became the *nuclei* of colonies and, finally, the capitals of States. All along the north and north-eastern coast the same process was determined by natural conditions. In the forefront of each community was the sea, difficult of access except by the port where the *recife* or reef had been pierced. Behind was the forest-clad mountain range, and behind that, on the inland slope of the plateau, the vast sweep of the *sertão*.

One of the States which extends furthest inland from the east coast is Pernambuco, and in this State it is possible to mark the various belts of country from the coast to the centre, and their distinctive features. Beyond the narrow coastal strip of low-lying and sandy country, lies the fertile belt of forest land known as the *Matta*. Here the trees are large and fine, always green throughout the year, and wide in their variety. Further inland comes the belt known as the *catinga*, where there are still large forest trees, though they are neither so

many nor so great. They shed their leaves in the dry season, and emerge from a thorny undergrowth of remarkable density. Beyond the *catingas* is a region known as the *agreste*, a transition from *catinga* to *sertão*. Here and there a big tree may be seen, but the *agreste* is mainly covered with bristling scrub. The *sertão* of Pernambuco is mostly trackless waste, covered with a bristling vegetation and scrub: dry and leafless in the dry season, but green and lovely when the rains have restored its luxuriance. The soil is less fertile than in any other part of the State, but there are many drought-resisting plants and trees, which are used as fodder for the cattle, to which this area is given over. By reason of its elevation above the sea-level, it enjoys a climate fresher and more pleasant than any other part of the State.

Finally, we come to those central highlands of which but little has been known until the last few years. The State of Matto Grosso bears a name which means literally "thick forest," and there are parts of it at least which do not belie the name. The explorers who surveyed the telegraph line from Cuyabá, the capital of the State, to Santo Antonio, on the river Madeira, encountered a kind of forest hitherto unknown, which was called by them "Charavascal." It is composed of trees of small diameter, creepers and fine bamboos: the whole so matted together that it is impenetrable. When the first explorer cut his way into this thicket with his forest cutlass (*facão de matto*), the elastic vegetation closed in upon him so closely that the men following in his footsteps had also to have recourse to his weapon to cleave

a way into the wall of vegetation. Of the heights of Goyaz, where the watershed of Brazil is situated, travellers write in glowing terms. Here are fine forests and wide pastures; fertile stretches of arable land, and the nucleus of a great agricultural and pastoral settlement.

It is now necessary to pass to the actual geographical features of North Brazil. As already remarked, the coast-line is a singularly unbroken one, there being few large bays or great capes, or promontories.

From Cape Orange, the extreme northern point of the coast of Brazil, to the most southerly point in Rio Grande do Sul, the projections of the coast-line are comparatively small and insignificant. At the Amazon delta, Cape North on one side and Tijuca point on the other, mark the great opening upon the sea. In Maranhao is Point Tamandoa; in Ceará, are Capes Patos and Macuripe; and on the north-east corner of the Continent, Cape São Roque. In Parahyba is Cape Branco and Points Lucena and Matto; and in Pernambuco, Cape São Agostinho and Points Sarramby, des Pedras, and Timbaba des Coqueiros.

BAYS AND REEFS.—In the north is the delta of the Amazon, then the *Bay of S. Marcos* and the *Bay of S. José*. The *Bay of Tutoya* is on the eastern border of the State of Maranhão, and from there to Cape São Roque is a long stretch of sandy beach, broken only by the rivers and creeks of the mainland. From Cape São Roque to the very south of the State of Bahia, a reef of rock lines the coast, which has few indentations. Here and there the reef is broken by the outlet of the



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Entrance to Bahia Bay

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flood waters of some river, and at such places a harbour has been made in the river mouth. There is also a notable break here and there in the reef, as at Recife, the great Port of Pernambuco ; and near the fine *Bay of Todos os Santos*, where the city of Bahia is built.

ISLANDS.—The islands of Brazil are few in number, and most of them are separated from the mainland by very narrow channels. Those at a distance are the *Fernando de Noronha* group, 230 miles from Cape São Roque ; *Trinidad*, 900 miles from the coast of Espírito Santo ; and the small isles of *Martin Vaz*, which are near.

The great island of *Marajo* is at the mouth of the Amazon. Other islands that are coastal are *Maranhão*, on the coast of that State ; and Itamaraca, on the coast of Pernambuco Bahia, has *Itaparica*.

RIVERS.—Among the rivers of Brazil, foremost place must be given, of course, to the *Amazon*, 3,375 miles in extent. This great river is the result of the confluence of a number of mighty streams, some of them, such as the *Tocantins*, being themselves the outcome of the unison of two or more immense rivers. On the north side the most important of the Amazonian tributaries are the *Ica*, the *Japura*, the *Negro*, the *Trombetas*, the *Paru*, the *Jary*, the *Jamanda*, and the *Araguary*. On the south side the tributaries from source to mouth are the *Javary*, the *Jutahy*, the *Jurua*, the *Teffe*, the *Coary*, the *Purus*, the *Madeira*, the *Tapajoz*, the *Xingu*, and the *Tocantins*. The Amazon itself is navigable, for large steamers, from its mouth as far inland as Iquitos, in Peru ; and all the tributaries mentioned are navigable

rivers except where they are broken by rapids and cataracts.

The difference in climatic conditions in the watershed of the northern tributaries and that of the watershed of the southern tributaries, has the effect of keeping the main stream always full, for the northern tributaries are high when the southern ones are low ; and *vice versa*. The sources of the southern tributaries of the Amazon are identical with those of the other great river system of South America, the river *Plate*. Brazil's share of that great river system consists of the *Uruguay* and the *Paraná*, both mighty streams enforced by large Brazilian rivers. The main tributaries of the *Paraná* are the *Paranáhyba*, the *Rio Grande*, the *Tiete*, the *Pardo*, the *Parapanema*, the *Ivahy*, and the *Iguassu*.

Apart from these two great river systems, there are countless great and small rivers, which discharge their waters into the Atlantic Ocean. Some of them, such as the *São Francisco*, wind long courses through the valleys of the uplands before finding their way to the sea. Others are short and tumultuous streams, which rush down the mountain slopes for short courses. In the chapter dealing with the different States, some account of these rivers is given in the State through which it flows.

It may not be out of place here to mention the outstanding fact that many of these rivers, in their course through the lofty plateaus of the interior, fall over high rocks, and that the numerous waterfalls of Brazil are numbered among the economic advantages of the country.

The following is a list of the more important rivers of North Brazil, with the length of each in English miles—

River.		Flows into.		Miles.
Amazon	..	Atlantic Ocean	..	3,400
Madeira	..	Amazon	..	2,025
Purus	..	"	..	1,875
Tocantins	..	"	..	1,650
Araguaya	..	Tocantins	..	1,640
Jurua	..	Amazon	..	1,250
Paraguay	..	Rio de la Plata	..	1,300
Tapajoz	..	Amazon	..	1,245
Xingu	..	"	..	1,240
Japura	..	"	..	1,155
Guapore	..	Madeira	..	1,070
Parnahyba	..	Atlantic Ocean	..	1,070
Itapicuru	..	"	..	1,030
Negro	..	Amazon	..	970
Ica	..	"	..	907
Velhas	..	São Francisco	..	710
Mearim	..	Atlantic Ocean	..	687
Jequetinha	..	"	..	680
Jutahy	..	Amazon	..	660
Teffe	..	"	..	620
Javary	..	"	..	590
Gurupy	..	Atlantic Ocean	..	500

The lakes of Brazil are neither large nor important, most of those in North Brazil consisting merely of coastal lagoons connected by some channel with the sea. The largest of these are in the State of Alagoas, which takes its name from the fact that the name means "the State of Lakes." The following is a list of the more important lakes of North Brazil, with the length of each in English miles—

Lake.		State.		Length.
Motta	..	Maranhao	..	46
Mandire	..	Matto Grosso	..	21
Jequiba	..	Alagoas	..	21
João Pires	..	Maranhão	..	17
Grochuras	..	Rio Grande do Norte	..	15
Arary	..	Pará	..	11
Burity	..	Ceará	..	9
Boassica	..	Alagoas	..	7½

Lake.		State.		Length.
Caceres	..	Matto Grosso	..	6
Mangaba	..	Alagoas	..	6
Guaibya	..	Matto Grosso	..	6
Bomfim	..	Rio Grande do Norte		5
Formosa	..	Goyaz	..	4½
Feia	..	„	..	4½

MOUNTAINS.—The mountains of North Brazil may be divided into two systems: the Serra or coastal range and the central system. The *Serra* runs parallel with the eastern coast from the State of Rio Grande do Norte to the southern boundary of North Brazil. Its distance from the coast varies from a few miles to a hundred or more, but everywhere it is a marked feature of the country. It is more actually the serrated edge of a great plateau than a mountain range, since the counter-slope into the interior of the country is so gentle as almost to be negligible, except in places here and there.

The Central system runs north and south through the State of Goyaz, and consists of two distinct chains, between which flows the river Araguaya. One chain, known as the *Canastra*, has for its highest point a peak of 4,100 ft.; and the other chain, the *Matta de Corda*, culminates in Mounts Pyreneus (7,750 and 7,500 ft.).

With the exception of the vast valley of the Amazon and the coastal strip, which varies in width from a few miles in Rio de Janeiro to 200 miles in Pernambuco, very little of Brazil is less than 1,000 ft. above sea-level or more than 3,000 ft.

CHAPTER II

CLIMATE AND HEALTH

A COUNTRY as large as Brazil, which is more than three-fourths the size of all Europe, has naturally a wide range of climate. Indeed, within its boundaries may be experienced all climates except the very extremes, for nowhere is it excessively hot or unduly cold. It is best for purposes of description to divide the country into three climatic zones : the tropical, the sub-tropical, and the temperate.

The TROPICAL ZONE itself subdivides into three sections, viz.—

(a) The higher Amazon ;

(b) The interior of the States of Maranhão, Pará, Matto Grosso, Piauhý, and part of the interior of Bahia and Minas Geraes ;

(c) The district of the seashore of the States of Pará, Maranhão, Piauhý, Ceará, Rio Grande do Norte, and Parahyba.

In the higher Amazon the year is divided into two parts : the period of the heavy rains and the period of the light rains. The heavy rains last from February to June, and the light rains from October to January. The temperature varies but little throughout the year, and when there is any breeze it usually blows from the south-west.

In the interior of the Northern States, the summer is the rainy season, and in some places these rains extend

until the middle of the year. Sometimes they do not come at all, and this is especially the case in Ceará. There is little difference between winter and summer temperatures.

The coastal district has very heavy rains in the summer and autumn, the rainiest month being April. The dry season comes in the last four months of the year, but all the Eastern part of this zone is liable to drought.

The SUB-TROPICAL ZONE may be divided into two sections, each of which has its rainy season, but at different times in the year. The first section comprises the States of Pernambuco, Alagoas, Sergipe, and the coastal district of Bahia. In this part of Brazil heavy rains fall between June and August.

The second section includes the South of Bahia, Espirito Santo, Rio de Janeiro, and the coastal part of São Paulo. Here rain is plentiful in the summer and autumn, from December to April. There is a wider difference between summer and winter temperatures in the sub-tropical zone than in the tropical zone. The winds that prevail are either from the south south-east or the north north-west.

The TEMPERATE ZONE includes the States of Paraná, Santa Catharina, Rio Grande do Sul, the uplands of Minas Geraes, and the south of São Paulo. Here the rain falls in the autumn and the winter; the temperature is milder, but shows greater extremes, though they are only normal. Winter extends from June to August, and in most places is very mild. In the uplands of the south, snow is sometimes seen, and frost at night is no rarity. But the day gives bright skies and bracing

sunny weather, with an occasional rainy day, when the rain is heavy and sudden.

Passing from general observations, it will be well to give some particulars.

In the Amazonian valley it is very hot in the middle of the day, but the mornings are fresh and the evenings often made pleasant by a cool breeze. There is a noticeable diminution of temperature at night time, which makes sleep possible at all times of the year. The two dry seasons are January and February, and July to October; as already stated, the intervening months are marked by two separate rainy seasons.

The interior of Maranhão and the north of Matto Grosso has much the same climate, but there is rather more variation of temperature.

Along the northern coast the equability of the climate is quite remarkable; as a traveller who recently visited those shores has written: "There is much weather, but no climate to speak of." There is not 20° centigrade between the extremes of heat and cold recorded in a year along the northern coast of Brazil.

The coastal rainfall decreases as one goes East, being very heavy at Belém and reaching its minimum in the interior of Ceará, though the coastal districts of Rio Grande do Norte are not always blessed with the rains that are hoped for. Going south along the coast, the rain increases again until at Pernambuco the annual rainfall may once more be described as considerable.

In the north of Bahia and the State of Sergipe, December, January, and February are the hottest months, and June, July, and August the coolest. These are the

months of the rains, though in the hot months there are occasional very heavy rains. The winds blow from south-east and east from April to September, and from north and east north-east between September and March. The atmosphere is humid and the heat is oppressive, though the degree of temperature is not high.

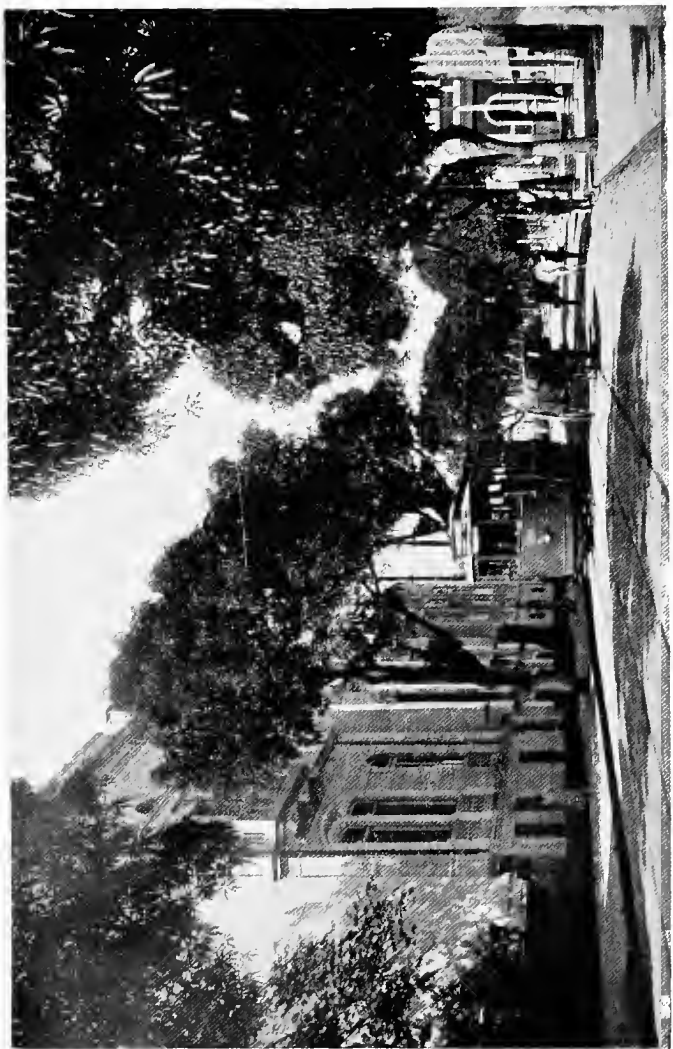
In the south of Bahia, Espirito Santo, Rio de Janeiro, and the north-west of Minas Geraes, the rains last from December to April. The climate is milder than in the section immediately to the north, though the atmosphere is equally humid. The prevailing winds are from the south south-east and the north north-west.

The south of Matto Grosso and the valley of the Paraguay, in its middle and upper course, has a tropical climate. The heat is great and the atmosphere charged with moisture ; heavy rains and violent winds characterise the wet season.

In the uplands of Minas Geraes and Goyaz, the climate is much more pleasant. The atmosphere is less humid, and owing to the elevation the heat is not so great. A similar climate is found in the north of São Paulo ; and the whole region, thus loosely defined, is, by reason of its fine climate and fertile soil, the most productive part of all Brazil.

The coastal strip of the temperate zone has a uniform climate, and regular and copious rains. It is fertile and covered with luxuriant vegetation ; the atmosphere is humid, but tempered by regular cool sea breezes.

The climate of the uplands of the temperate zone is that of Southern Europe. Rain is frequent, but the clouds are quickly dispersed, and there is a large number



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Belém do Pará. Estrada de Nazareth

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of bright, sunny days. The wind from the south-west blows at certain seasons of the year, and is known as the "pampeiro," because it comes from the pampas of Argentina. It is chilly, but invigorating. The average temperature at Curityba is 16.4 Centig. and at Pelotas 18 Centig.

It will be seen from this brief *résumé* that in Brazil all degrees of climate are to be found, except the very extremes of cold and heat. It has been proved by experience that European people can acclimatise themselves rapidly and without inconvenience in almost every part of the country.

The time is now past when the opinion held that Brazil is an extremely unhealthy country. The justification for that view has ceased to exist, owing to the discoveries concerning the causes of malarial and yellow fever. It is not very many years since the two great ports of the country—Rio de Janeiro and Santos—were dubbed fever holes, and with reason. The annual visitation of the dread yellow fever was accepted at both places as an inevitable result of the climate and surroundings of these fine cities. At Rio, the mortality from this cause was very heavy in the early nineties. In 1891 there were 4,456 deaths ; 4,312 in 1892 ; and 4,852 in 1894. During the next ten years the havoc caused by yellow fever, if not so appalling, was at least very high. The lowest number of deaths was in 1901, and then 2,299 were recorded. By the end of 1903 the roll of mortality had reached 58,635—since 1850, a terrible record.

By that time it had been discovered and proved that

the disease was transmitted by mosquitoes, and the Government determined to stamp out the insects which transmitted the disease. A brigade of men—1,500 in number—were appointed for the purpose, under the title of “mosquito-killers,” and a rigorous cleansing and disinfection of the city began. Petroleum was used freely to destroy the eggs; a general scheme for the better sanitation of the city was put in force; and, in spite of the opposition of the ignorant and the prejudiced, the work of sanitation was thoroughly performed. The deaths from yellow fever sank from 584 in 1903 to 48 in 1904; in 1908 there were only 4 deaths; and in the next year there was no death from this cause. The British Consul at Rio de Janeiro, in his Consular Report for 1911–12, mentions that during the year there were three cases of yellow fever reported in the city, though none of them were fatal; and adds that all were imported cases from the northern coast.

A similar work of sanitation and mosquito destruction freed Santos from the mosquito plague and, consequently, from the epidemics of yellow fever with which the name of the port was once associated; and similar steps have been taken in all the Brazilian cities where once this plague was rife. The Brazilians are now able to publish the death rates of their large cities and to compare them with advantage to those of the capitals of Europe. (See table on next page.)

The Brazilian cities instanced are, of course, the most up to date in their sanitary arrangements in the Republic. A different tale would have to be told until quite recently of such cities, as Recife, Belém, and Manáos; but these

cities are also now providing themselves with the best and most efficient means of sanitation.

				Death-rate per 1,000.
St. Petersburg	..	..	..	30.5
Madrid	..	..	..	28.0
Rome	..	..	..	20.8
São Paulo	..	..	..	20.8
Rio de Janeiro	..	..	..	20.7
Bahia	..	..	..	18.1
Paris ..	..	..	..	17.6
London	..	..	..	16.5
Curitiba	..	..	..	14.9

To prevent the spread of malaria and fever is one thing, but to abolish the conditions which give rise to it is quite another matter. If Brazil, in the past, has had an unduly bad reputation for fever and similar epidemics, and if the scourge has been effectively driven from places where it should not harbour, it is unreasonable to paint the whole country as a kind of tropical sanatorium.

There has never been greater conflict of opinion concerning the climate of any region in the world, than that which still rages over the health conditions of the Amazon valley. The varying accounts of the life of the rubber gatherers, and the reasons given for the great mortality which undoubtedly characterises their existence, give special interest to the subject. At the very outset it must be said that the heavy death-roll among these people is undoubtedly due in a great measure to the climate and conditions under which they work.

There are vast tracts of country bordering the rivers and streams, which are flooded in every rainy season. These swampy tracts are those in which the "seringa"

flourishes, and where the best quality of rubber is obtainable. When the waters have subsided, and the rubber gatherers are able to proceed with their work, a vast mass of vegetation that has been submerged begins to dry and decompose in the tropical and humid atmosphere. The exhalations given off are those which conduce to malaria, and it is unavoidable that those who work amid all this festering vegetation should suffer from malarial complaints.

To remove the cause is quite impossible. All that can be done is to provide, as well as possible, for the alleviation of the sufferings of the dwellers in such localities.

The State of Pará and many of its municipalities take steps which are sensible and humane. There is, in many places, a free distribution of quinine and other drugs useful in the circumstances, and also circulation of pamphlets showing the best way to administer such palliatives.

In most of the schools in that locality, the children are instructed in these measures, and are also the recipients of free quinine and other medicines. As we shall presently see, the measures promulgated by the Federal Government for the protection of the rubber industry include the establishment of sanatoria, where *paludism* can be treated with the proper drugs and fresh foods.

All this is a frank admission that the rubber districts of Amazonia, at least, are not healthy, and can never be made healthy by such steps as were adopted to provide sanitation for the eastern cities.

There are similarly vast areas along the river Paraguay,

in the State of Matto Grosso, where conditions of the same kind are observable. At present, these areas are very sparsely populated, though the future may bring a large population of rural dwellers to these districts, for they hold the greatest pastoral promise. The recurrence of the seasons, and the heat and humidity of the climate, will always produce the same effect, a luxuriant vegetation only growing to rot and produce fever. No argument and no precaution will ever make such areas healthy, in the accepted European definition of the word.

It must not be supposed, however, that the whole Amazonian valley is a pestilent fever area. The higher ground is free of the malarial poison, and has been proved quite habitable for Europeans. In the morning, till about 10 o'clock, the atmosphere is fresh and pleasant ; but the heat is overpowering through the day until late in the afternoon. The humidity adds to the languor experienced by the new-comer, and the fresh breezes of the evening have a double welcome. They make the nights bearable and render sleep possible. The same conditions apply throughout the year, the only difference observable being, that for one-half of the year heavy rains are frequent, while during the other half they are absent. Europeans grow gradually accustomed to the Amazonian climate, and eventually come to like it.

The great cities of North Brazil are still behind those of the south in sanitation ; but the example of the south has not been lost, and gradually they are adopting similar steps to check disease. The sanitation of Bahia has made a great deal of difference to life in that city, and Recife.

Pará, and Manáos are following in the same steps. The smaller northern capitals are striving for better sanitation, an instance being São Luiz, of Maranhão. The necessity being recognised, the provision of proper sewerage and other sanitary arrangements is but a matter of time and means with such enterprising people as the city-dwellers of Brazil.

CHAPTER III

FLORA AND FAUNA

I. THE FLORA.—Brazil includes an enormous tropical region, the flora of which is amazing in its variety and its rapid and prolific growth. The soil is so rich and the moisture so abundant, 'that ground which has been cleared, will, if left to itself, be covered in a very few years' time with a growth indistinguishable by the inexperienced eye from that of the virgin forest; and this is true, not only of the Amazon basin—familiar to the English reader from the accounts of Bates, Wallace, and other travellers and naturalists—but also of the south and west of Minas Geraes, the valleys of the Doce and the Parahyba, and of the Serra do Mar along the Atlantic coast of Southern Brazil, right down into Rio Grande do Sul.

The lower land in the Amazon basin is subject to periodical inundation. Tough grasses grow on the ground, with willows and plantains; very characteristic growths are the palms and the *Arundo saccharoides*, with bare trunks and dark green, spreading crowns. The gigantic *Victoria regia* is found in the water; and the forest trees include cinchona, rubber, bombax, mimosa, and myrtle. The virgin forest above the line of inundation has an extensive growth of ferns and a great variety of huge timber trees (reaching 180 ft. and upwards in height). They are covered with parasitic plants and vines, or lianas, with brightly-coloured flowers. Mangroves and *conocarpos* grow along the Atlantic coast as

far south as the State of Rio de Janeiro ; and cypresses and palms are found in the lower parts of this grass-covered plain or *campos* inland. The cultivated crops (coffee, cotton, tobacco, cacao, maté, etc.) are described under *Agriculture* ; this section gives a rapid analysis of the indigenous flora, more especially from the standpoint of its economic value.

Rubber Trees. The best forest rubber is procured from the Euphorbiaceous trees of the *Hevea* species, especially *Hevea brasiliensis*, *H. discolor*, and *H. guayanensis* ; almost as good latex is obtained from the *Micrandra syphonoides*, *M. elata*, and *M. bracteosa*, which also belong to the Euphorbiaceae, and from the *Sapium* species. The inferior "caucho" rubber comes from the *Castilloa elastica*, (fam. *Artocarpaceae*). All these are tall trees, the Heveas growing up to nearly 100 ft. and the Castilloas up to 65 ft. Mangabeira rubber is obtained from the *Hancornia speciosa*, a shrub, with several species, which only grows about 10 ft. high. Maniçoba rubber comes from the *Manihot Glazovii*, found mainly in Ceará, Piauí, and Bahia. Inferior qualities of latex are produced by many other trees and shrubs, which may be ultimately turned to a commercial use, e.g., the *Mimusops elata* (producing balata gum), *Lucuma procera*, and *L. laurifolia*, *Platonia insignis*, *Ficus elasticus*, *Plumeria phlagedenica*, *Soarezia nitida*, *Couma utilis* (sorveira), *Urostigma doliarum*, and the *Landolphias*.

TANNIN-PRODUCING TREES.—These are exceedingly numerous, and are not only used in Brazil, but exported to Europe. The most important are the Barbatimão (*Stryphnodendron b.*) and the red mangrove (*Rhizophora*

mangle); others include the red angico (*Piptadenia rigida*), *Apuleia praecox*, *Acacia jurema*, *Ludwigia caparrosa*.

FIBRE-PRODUCING PLANTS of many different families are also very numerous. The most familiar, known as *Aramina*, belong to the family *Malvaceae*, and are cultivated in S. Paulo; and the Brazilian hemp or Perrini flax (*Canhamo br.*) is cultivated in Rio de Janeiro. Excellent fibres are obtained from many palm-trees, from the Piassabas, the Piteira, the Paineira (a silky fibre), the Barba de Velho, and the Gravatá (*Bromelia lagenaria*).

VEGETABLE OILS AND WAXES are procured from the seeds of the castor-oil plant (*Ricinus communis*), the Anda-assú, the Queimadeira, the Copaifera; from the Brazil nut trees—the *Bertholletia excelsa* (Pará chestnut)—and the Sapucaia; from the Andiroba or Jandiroba; from the *Myristica* or tallow-trees; from the Carnaubeira; from the coco-nut tree, which yields copra; from the Avoira and other palms; and from the pea-nut.

MEDICINAL PLANTS include a large variety of cinchonas (known in Brazil as Quinas), quassia, angostura, sarsaparilla, ipecacuanha, jalap, guaraná, maté, jaborandi (from which pilocarpine is obtained), colchicum, sassafras, cashew, dragon's blood, and numerous others. Icu, urare, canabi, and many others contain poisons.

ORNAMENTAL PLANTS include upwards of 1,000 orchids (Cattleyas, Loelias, and many others), the most beautiful coming from Espirito Santo and S. Catherina; bamboos, palms, tree-ferns; camaras, gloxinias, begonias, etc.; the passion-flower; and the famous *Victoria regia*, mentioned above.

DYEWOODS—red, blue, yellow, violet, black—are numerous, including Brazil wood (*Caesalpinia echinata*) dragon's blood, anil, indigo (not indigenous), annatto, eupatoria, and genipapo.

GUMS are obtained from various Jatobás, angicos, cambuys; RESINS from the Paraná pine, icicariba (elemi), copayer, and carana; and ESSENCES from the Cumarú (Tonka bean), vanilla, cravinho.

TIMBER TREES.—The forests of Brazil are notable for the variety of species they contain—a fact which is adverse to their exploitation on the lines of the North American lumber trade. Many trees are of extraordinary hardness, “more like iron than wood”; many also are very beautiful in scent, colour, and texture, and admit of high polish. The development of the timber trade is slow, and the wood so far has been used in bulk mainly as fuel (for the railways and sugar-mills), and for making railway sleepers. Many useful and characteristic species have been mentioned above; among timber trees proper are the following: Bacury (*Platonia insignis*), latex-producing, used for building; Sucupira-assú, a building wood; Ipe or bow-wood (*Tecoma*), used for piles, harbour-work, etc.; Massaranduba (*Lucuma procera*), a gigantic tree, with hard water-resisting timber, producing a rubber latex; Pao ferro or ironwood, extremely hard, used for piles, etc.; Muirapinima (*Brosimum*), chocolate and black, used in marquetry; Sapucaia (*Lecythis*), hard wood, for building, piles, etc.; Louro, for joinery and coopering; Itaúba preta, black and durable, used for building and piles; Acapu, tall tree with hard wood; Guarapuvira, for joinery and carriage-building; Pao

Roxo, for carriage-building ; Jacaranda or Rose-wood (three main species : *J. preta* = black rose-wood, *J. cabiuna* = real rose-wood), used for furniture and building ; Pao precioso, yellow, used for cabinet-making ; satin-wood (*Aspidosperma eburneum*), sulphur coloured, used for cabinet work ; Araribá (*A. amarello* = yellow box-wood, *A. rosa* = red boxwood) ; Peroba (*Aspidosperma*), close-grained, used for furniture and building (*P. revessa* = figured peroba ; *P. rosa* = red wood) ; Imbuia, brown, used in cabinet-making ; Araucaria or Paraná pine, red or white, grows to 150 ft. ; cedar of Brazil, pink colour, and easily worked ; Vinhatico (Brazil mahogany), with very thick trunk, used in cabinet-making ; Angelim (several species), resists attacks by ants and other insects ; Gonçalves (Alveswood) ; Pequiá Marfim (goldwood). This list might be very largely extended ; but the above are typical of the qualities and uses of Brazilian woods, and a full catalogue of native or botanical names would be out of place here.

FRUIT AND VEGETABLES.—These are dealt with under *Agriculture*.

FRUITS.—All kinds of fruit flourish, and many species have been imported and acclimatised (*e.g.*, vines, oranges, lemons, plums, etc.). Characteristic indigenous fruits are the abacati, pineapple (abacaxi), coco-nut, cashew (producing a fruit with a nut at the end), bread-fruit, genipapo, abieiro, araçá, several cacti, bananas, Pará apricot, custard apple (Fruta de Conde, Pinha, or Ata), Bacuri, jambeiro, imbu, pitanga, guava (used largely for preserves and jellies), jamboticaba, mamona, cambuca, mango, sapoty, and guaviroba.

CEREALS AND VEGETABLES.—These are dealt with under *Agriculture* (*q.v.*). Maize, mandioca (sweet and bitter), arrowroot, and mangarito are indigenous; and so perhaps are the potato, cara, sweet potato, and yam, though many species have been imported.

GRASSES are abundant in quantity and very numerous in species. The fodder grasses, known as *Capim*, most used are the *C. de raiz*, *C. branco*, *C. mimosa*, *C. marmalada* (grows 16 ft. high), *C. boi chamba*, *C. arroz*, *C. da praia*, *C. garova*, *C. lanceta*, and *C. gordura*; these belong to the Order of Gramineae. Others again are leguminous. Wild grasses include the papuan, jaragua, jequirana, joelfindo, and herva d'anta (so called from the love of the tapir for its leaves).

II. THE FAUNA.—The Neo-tropical or Neo-Gaeic region of the world, of which Brazil forms part, possesses many peculiar species of birds, fish, and animals, most of which are represented in the Brazilian fauna; but it has no indigenous representatives of the horse, sheep, goat, or antelope families.

Of Brazilian mammals, the largest and strongest is the *tapir* or *anta* (*Tapirus Americanus* or *terrestris*), which has a heavy, short-haired body, with a mobile proboscis and rudimentary tail; it is of nocturnal habit. The flesh is wholesome, and the hide good for harness and saddle-making. The *jaguar* or ounce (*Felis onça*), and the *puma* or cugar (*Felis concolor*), are of the tiger family. The former is the larger, and is of buff colour marked by black spots; there are four species. The latter is tawny, with dark streaks along the back; two species exist. Both prey on domestic animals, as well

as on deer, rodents, monkeys, etc. To the canine family belong the *lobo* or wolf (*Canis jubatus*), the Brazilian dog (*C. brasiliensis*), the fox-like *C. vetulus*, and the South American raccoon (*Procyon carnivorus*). There are twelve species of marsupial opossums (*Didelphys* and *Cheironectes*). Rodents are numerous, including six species of porcupines, two of the semi-amphibious caviés (*C. paca*), and numerous rats. The Edentates includes some of the most characteristic of the animals of Brazil, viz., two kinds of sloth (*Bradypus tridactylus* and *B. torquatus*), six kinds of Armadillo or Tatú, and a very large and a small ant-eater (*Myrmecophaga jubata* and *M. tetradactyla*). There are four species of deer, two peccaries or wild hogs—the “white-lipped” and the “collared”—together with the guinea-pig (*Coelogenys*), the capybary, the agouti, the otter (*Hydrochaerus*), the hare, and the rabbit. The monkeys—mainly found in the Amazon region—number over fifty species, the most sagacious being the coati (two species: one gregarious, the other living in pairs); the howling monkeys, the capuchins or cebus, and the marmosets (fourteen species) are well known.

The birds of Brazil number over 1,700 species, some famous for their brilliant plumage, others for their singing, others again for their powers of screaming and croaking. They range from the king-vulture to the tiny humming-bird, and include the Rhea or American ostrich, the long-billed Toucan, and numerous parrots.

Of bats and vampires, there are twenty-four or more species, and in some districts they are a dangerous pest. Reptiles are numerous, including the Anaconda or

water-boas and the boa-constrictor ; of some fifty species of snakes, about a dozen are poisonous, the most dreaded being the Jararaca and the rattlesnake. Alligators swarm in the larger rivers, especially of Pará, and turtles and turtle-eggs form an important article of diet on the Amazon. The sea-cow (Lamantin or manatee) and the Boto or fresh-water dolphin are also found and hunted in the Amazon. Frogs and toads, crabs and lobsters, and mollusca are also numerous.

It only remains to notice the teeming insect and fish life. There are butterflies, large and small (some of great beauty) ; spiders, beetles, ants, mosquitoes, ticks, etc. ; of one family of insects, the Longicornes, nearly 500 species are known. Both rivers and coast abound in fish, and it is said that the Amazon basin contains over 1,800 species. Notable among them are the *pirarucú*, the largest of fresh-water fish ; the *piránha* called in the Orinoco region, the *Caribe*), a fierce carnivorous fish, attacking animals and men ; and the *gymnoto* or electric eel. Many of them, especially on the coast, are valuable as food, and are caught in great quantities.

Apart from the food value of many of the fauna, other economic uses are not inconsiderable, *e.g.*, the skins of the ox, sheep, and goat provide leather ; the coypu provides material for felt hats, and the tapir for saddles, harness, etc. ; the tails of several kinds of monkeys are used for making muffs ; and the skins of the jaguar, deer, otter, cayman, and capybary are also valuable.

Oil is prepared from whales, of which nine species are found in Brazilian waters, from turtle-eggs, and from

several fish (*e.g.*, the Lamantins, Bogres, and Squales); and isinglass from several species. The feathers of the egret and of the emu or rhea are valued in the European markets. Finally, specimens, both living and stuffed, are exported in increasing numbers.

CHAPTER IV

HISTORY AND SETTLEMENT

THE Brazil of to-day is the greatest monument remaining of the Portuguese genius for exploration and colonisation. It is true that Portuguese supremacy in Brazil was maintained during the seventeenth and eighteenth centuries because of the European struggles in which France, Holland, and England were involved ; but, none the less, the adventurers of Portuguese extraction, who struggled to maintain the prestige of that race in Brazil, did so with skill as well as resolution.

The first European discovery of Brazilian territory was made by a Spaniard named Pinzon, who, in 1500, sighted the coast near the mouth of the Amazon and explored the estuary of that river. A few months later, Pedro Cabral, a Portuguese navigator, bound for India, making a wide detour to avoid the calms of the doldrums, got into the Brazilian current and landed at Porto Seguro. He at once took possession of the country, which he supposed to be part of Asia, in the name of the King of Portugal. He sent a vessel back to Portugal with the news, marooned two unsatisfactory crews on the spot, and went on his way to India.

A fleet of discovery was sent out from Portugal to the new possession and, encountering Gabral on his way back joined forces with him ; the combined fleets explored a great part of the Brazilian coast. Another fleet followed, and the Brazilian coast became a regular calling place for Portuguese ships on their way to India.

But the Portuguese were not to have it all their own way, for the French were deeply interested in the north coast ; and Dom João III found it necessary to send out a fleet against them in 1526. The fleet was successful, and a settlement was established at Pernambuco. To retain possession of the new land, it was divided into areas called "capitaneas," each of which was handed over to some suitable Portuguese noble, who could undertake to defend and settle the portion allotted to him. This was the beginning of the Portuguese occupation of Brazil. Each "capitanea" was to be hereditary ; it had a strip of coast line 150 miles in extent, and attached to it was the country inland as far as the capitan could control. Fifteen of these "capitaneas" were allotted, and settlement was begun by the Portuguese at 15 points along the Brazilian coast.

FOUNDATION OF BAHIA.—The defining and limiting of the "capitaneas" was the task of Martin Affonso de Sousa, who set out with a fleet from Portugal in 1530 to perform the work. He entered the Bay of Todos os Santos and found living there, in all friendliness with the local Indians, a member of one of the crews marooned by Cabral when first he took possession of Brazil. This man was Correia, called by the Indians, Camamurú ; and he used all his influence with the Indians for the benefit of his fellow-countrymen. Thus Affonso de Sousa was enabled to found Bahia, the original Portuguese capital of Brazil.

The "capitanea" of Bahia was granted to a captain named Coutinho, who was also backed by Camamurú, and was enabled to establish colonies inland. There,

however, his followers enslaved the Indians, and provoked a rising which was the beginning of bad feeling between whites and aborigines. In the end, Coutinho was shipwrecked and killed and eaten by the aborigines whom his followers had provoked.

News of this disaster reaching Portugal, Thomé de Sousa was sent out, in 1549, with a strong force to establish a royal colony there, which should serve as a nucleus of strength to the scattered "capitaneas." He had with him a strong force of soldiers, and entrenched himself in military fashion behind the palisades of Bahia. He also introduced cattle from the Azores.

The members of his band, over 4,000 in number, took to themselves Indian wives, and the foundation of the Brazilian race was thus begun.

BEGINNINGS OF SÃO PAULO.—Just as Affonso found a Portuguese living in amity with the Indians at Bahia, so, on proceeding further south, in his work of colonisation, he found another under similar conditions at Cananea, in what is now the State of São Paulo. This was João Ramalho, who had married the daughter of the chief of the most powerful tribe of local Indians. As in the case of Camamurú, his great influence with the Indians obtained for the white men a friendly greeting and a foothold. Here, too, the Portuguese followed the example of this pioneer and took Indian wives, and the business of enslaving the Indians was repeated. The half-breed race that resulted combined the ferocity of the Indians with the intelligence of the whites; as the Mamelucos of São Paulo, these half-breeds played an important part in opening up the interior of Brazil.



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Bahia. The Portuguese Hospital

At that time the official name of the new land was Vera Cruz, the land of the True Cross ; but as the first cargoes to Portugal contained a large quantity of the red dyewood known in Europe as Brazil wood—the new possession was soon christened after that commodity.

With De Souza came the Jesuit missionaries ; and their treatment of the Indians showed a marked difference. As a consequence of their mildness, they attached to their settlements the best of the Indian labour, thus causing friction between themselves and the earlier arrivals. Indeed, the brutality of the first-comers caused Indian reprisals on such a scale, that help had to be sent to São Paulo from Bahia ; and, under the leadership of Albuquerque, the Portuguese drove the Indian bands as far south as the Lagoa dos Patos, where the first settlement in Santa Catharina was made at Laguna.

But when the country around São Paulo was cleared of Indians, there was none to labour in the fields, and the Mamelucos then started their slaving raids, from which they received the title of *bandeirantes*. The Jesuit missions were their first objective, and the effect of their raids was to drive away all the Indians from these missions. The Jesuits retorted by obtaining from Portugal, in 1570, a decree abolishing Indian slavery.

THE MINING EXPEDITIONS.—This decree was to have far-reaching results in the future, for it was the cause of the introduction of negro slaves into Brazil. In the meantime, the Paulistas showed their resentment of it by driving the Jesuits out of that part of the country. At the same time, they began to lend ear to the Indian tales of gold and jewels inland, and to send out expeditions,

from 1600 onwards, in search of the rivers of gold of which so much was told them. These expeditions were conducted on the lines rendered necessary by the character of the country and the known presence of bands of hostile Indians in every part of the forests. Outposts were, therefore, thrown forward to establish clearings and plantations, where the explorers might obtain the food they could not carry with them. Gradually, the Paulistas made their way by slow stages into the heart of the mountains of Minas Geraes.

The gold discovered in the alluvial river beds soon found its way to Portugal, and attracted a host of fresh adventurers, who poured into the interior in spite of the resistance of the Paulistas, who claimed the treasures of Minas by right of discovery. When the easily-got alluvial gold was exhausted, many of these adventurers settled on the fertile hills and founded the great agricultural and pastoral beginnings of the State of Minas Geraes.

RIO DE JANEIRO FOUNDED.—The settlement at Rio de Janeiro was effected in quite another fashion. The harbour itself was discovered two years after the momentous find of Cabral, the discoverer, one Gonzalo Coelho, mistaking the bay for the estuary of a great river. Beyond giving it the puzzling name it has borne ever since Coelho did nothing to mark his discovery, and when Affonso de Sousa made his voyage of organisation, he had to drive out the French before he could establish a "capitanea" there. For a long time the history of the new colony was one of continual struggles with the French, both sides recognising the naval value of the place; but in the end the Portuguese triumphed.

Indeed, it was the obvious naval value and accessibility of Rio de Janeiro that ultimately caused the capital to be transferred there from Bahia in 1762. The city maintained its connection with the rest of Brazil by sea, and its influence was little felt inland where the forests were occupied by tribes of unfriendly Indians.

The need for a strong naval station on the Brazilian coast was primarily due to the occupation of the Portuguese throne by Philip II of Spain in 1580. Up till that time the chief troubles of the colonists had been to repel the attacks of Spaniards. These now ceased; but the hostility of Dutch, French, and British was substituted. It would be impossible to recount here all the troubles the Spanish *régime* in Portugal brought upon the outposts of Brazil. They only ended in 1640, when Portugal ousted the Spaniards and the enmity of the aggressors was turned away from Brazil.

The attacks of these fierce opponents were centred on the north, where each of them had, in turn, planted settlements.

In 1612 a French expedition landed on the Island of Maranhão, where a town was built, and called St. Louis. After two years of fierce fighting, the invaders were driven out, but the town remains; and under the name of São Luiz is to-day the capital of the State of Maranhão.

The Dutch had made their settlements up the stream of the Amazon, and it proved to be even more troublesome to dislodge them. The Portuguese conducted their operations from their new fort of São Luiz; and it was an expedition from this place which built the fort at Belém, now capital of the State of Pará. Eventually

the Dutch were driven out, and the British as well ; and in 1624 we find Brazil divided into two great “ capitaneas ” —that of the north and that of the south. The north consisted of Maranhão, Pará and Ceará, and was called Maranhão. The capital was situated at São Luiz de Maranhão.

After the final expulsion of French, Dutch, and British, the North was allowed to develop in its own slow way in comparative peace, the more stirring events being confined to South Brazil.

By Portugal, Brazil was regarded as a colony, the trading monopoly of which was to be retained at any cost. Sugar and forest products were the first trading advantages derived from the possession of Brazil, and afterwards gold and precious stones. But Portugal was a nation on the down grade ; and the requirements from this great colony were not many, nor were they elaborate. For that reason the industry of Brazil expanded but slowly, and this sluggishness was accentuated by the prohibition enforced against other nations trading with Brazil.

THE BEGINNING OF EMPIRE.—An end to this lethargy came early in the nineteenth century, when Napoleon invaded Portugal and drove the Braganças from the country. The Prince Regent was Dom João, who reigned in the name of his mother, Queen Maria ; and he and his Court took refuge in Brazil. He landed at Bahia, and there issued a proclamation which procured for him a fervent welcome at Rio de Janeiro. It threw the trade of the Brazilian coast open to all nations, thus abolishing the deadening trade monopoly. He further

abolished the prohibition of industries, established the printing press, and gave the country its first measure of freedom and civilisation.

In 1815 Brazil was proclaimed a kingdom ; and on the death of Queen Maria, in 1818, Dom João was made king. The most enterprising of the Portuguese flocked across the sea to the new kingdom, and so a fresh strain of good Portuguese blood was introduced at a timely juncture.

In a few years Portugal, freed from the Napoleonic yoke, was asking its legitimate monarch to return, an invitation which fell in with the views of the courtiers who surrounded Dom João. He accordingly left Brazil for Portugal, leaving his son Dom Pedro as Regent. In Portugal fresh plans were made for the Government of Brazil by which all the States were to be governed from Lisbon and not from Rio de Janeiro.

BRAZIL'S AUTONOMY.—Finally, the return of Dom Pedro to Portugal was ordered. Dom Pedro refused to comply with this order, and announced that any landing of Portuguese troops would be resisted. A delegation from Brazil to Lisbon was received with insult, and Dom Pedro made his declaration that he would never leave Brazil.

On 7th September, 1822, he was proclaimed Emperor at Rio de Janeiro, and the Portuguese garrisons were turned out of the country. The new empire was accepted ; and, after a revolution in the north, Dom Pedro was securely established on the throne.

Shortly afterwards, the death of his father called him to the throne of Portugal, which he promptly abdicated in favour of his daughter, whose claim was disputed by

the claimant, Dom Miguel, who seized the throne. The popularity of Dom Pedro soon declined in Brazil, and his interference with his ministers precipitated a crisis. He was forced to abdicate in favour of his infant son, and returned to Portugal in 1831 to depose the usurper and seat his daughter on the throne there.

The new Emperor was but five years of age, and ten stormy years of regency followed. Then, at the age of fifteen, Pedro II was declared of age, and succeeded to the full responsibility of the empire.

Wars with Uruguay, and afterwards with Paraguay, had less influence on the progress of Brazil than the emancipation of the black slaves, which was the final work of Dom Pedro.

In 1854 there were, in Brazil, some 2,500,000 slaves, imported from the West Indies and Africa. In that year the slave trade was abolished, and subsequent legislation freed the children of slaves. When the final emancipation came in 1889, there were only half a million actual slaves in the country, but the influence of the imported negro blood had been impressed indelibly upon certain parts of the country.

The slaves did not, as was expected, stay on the plantations of their former owners ; but most of them migrated north, leaving the south with a great need for plantation labour. This, rather than discontent at the abolition of slavery, was made the excuse for an agitation against the Emperor, who had taken a prominent part in forwarding the emancipation. As a matter of fact, Brazil had outlived the monarchic stage, and wanted a more democratic form of government. But Dom Pedro was personally so

popular, that he commanded the respect of the most ardent revolutionaries, and it was tacitly understood that no change was to be made in his lifetime.

THE REPUBLIC.—The statement that he intended to abdicate in favour of his daughter brought these plans to nothing ; and he was deposed on 15th November, 1889, a republic being proclaimed. The change was inaugurated in the most pacific and constitutional way, and the Emperor was respectfully despatched to Portugal.

The early years of the republic were stormy. Rebelions in many of the States had to be put down, as well as opposition from without. The financial position of the country drifted into a condition perilously approaching bankruptcy, and the growing prosperity of the agriculturists was sadly hindered by lack of labour. The tasks of the early Presidents were to restore peace and order, to repair the shattered finance of Brazil, to provide a constant stream of white agricultural labourers for the southern States, and to provide communications for a country that has never been able to maintain roads.

As a country with large public and private indebtedness, Brazil has had to provide a wide margin of exports over imports, in order to meet obligations in the payment of interest on borrowings. The variations in the price of coffee and the large decline in the value of rubber have, during recent years, caused much uneasiness as to the future of the two main exporting industries of the country. Brazilian policy has recently been centred in providing the country with new productive industries, a policy which marks the most recent stage of political development in the Republic of Brazil.

The Presidents of the republic have been—

- Nov., 1889. Marshal Manoel Deodoro da Fonseca (at first the head of the provisional government, but elected constitutional President in Jan., 1891; resigned Nov., 1891).
Nov., 1891. Marshal Floriano Peixóto (former Vice-President).
.. 1894. Dr. Prudente José de Moraes e Barros.
.. 1898. Dr. Manoel Ferraz de Campos Salles.
.. 1902. Dr. Francisco de Paula Rodrigues Alves.
.. 1906. Dr. Affonso Augusto Moreira Penna (died June, 1909).
June, 1909. Dr. Nilo Peçanha (former Vice-President).
Nov., 1910. Marshal Hermes da Fonseca

The following brief sketch outlines the salient features of the history of Brazil as a Republic. The provisional Government decreed the separation of Church and State in January, 1890; and the republic was formally recognised by the United States of America in the same month, and by Great Britain in October. The Bank of Brazil was established in February; and the first of repeated separatist outbreaks in Rio Grande de Sul occurred in May, the State being put under military government. The first Congress met in November, and the powers of the provisional Government were thereupon transferred to it.

In February, 1891, the new Constitution was passed, and Fonseca was elected President. In November Congress, having refused the President the right of vetoing legislation, was dissolved and martial law proclaimed; Rio Grande do Sul and Pará declared their independence of the Union; and a naval mutiny broke out. In consequence, Fonseca resigned and was succeeded by the Vice-President Peixóto, who ruled by tyrannical and absolutist methods. His three years' term of office was

a period of continual civil war, the land forces of the State being opposed by a strong secessionist party, led by Admirals de Mello and da Gama, who controlled the Navy. Repeated bombardments of Rio and Nictheroy took place, imperilling the relations of Brazil with foreign powers. Ultimately Peixóto prevailed, and was able, before his presidency expired, to declare the country "pacified."

In November, 1894, began a succession of civilian Presidents, under whom the distracted country attained, by degrees, union, financial reorganisation, and the confidence of foreign nations. It took a considerable time, however, before the legacy of disorder could be overcome. War broke out again in Rio Grande in 1895; a dispute with Italy occurred in 1896, occasioned by attacks on Italians in São Paulo; and a curious insurrection of religious fanatics in Bahia, under Antonio Maciel or Conselheiro, lasted from March to October, 1897. Conspiracies occurred in Rio de Janeiro, where martial law was proclaimed (Nov., 1897, to Feb., 1898); and a serious financial crisis, involving the temporary suspension of payment of the Banco da Republica, occurred in September, 1899. From this point the tide may be said to have at last turned. Financial reform improved the credit of the country. Payment in specie was for a time suspended, and large quantities of paper money were destroyed.

At the end of 1906, under Dr. Penna, the Caisse de Conversion was established, and the rate of 15d. for paper milreis (since raised to 16d.) was fixed. Much attention was paid to the development of the resources

of the country by the establishment of colonies, and the removal of tariffs on agricultural and other machinery ; also to the improvement of railway facilities and the spread of education. The army and navy were reorganised and extended, the battleships *Minas Geraes* and *S. Paulo*, with other smaller vessels, being built in England for Brazil. The policy of the country meantime has been enlightened and the reverse of aggressive, some twenty-eight treaties of arbitration having been signed up to 1910, covering most of the American and several European powers.

The boundary with Bolivia was settled in 1902-3, when the territory of Acre was purchased by the Federal Government ; other boundary questions were settled amicably with French Guiana in 1900 by Swiss arbitration, with British Guiana in 1904 by arbitration of the King of Italy, with Argentina and Colombia in 1907, and with Peru and Uruguay in 1910. A permanent arbitration treaty with Great Britain was signed in 1909.

On 24th November, 1910, the two "Dreadnought" battleships (mentioned above) broke into mutiny and fired on Rio de Janeiro ; and, after this had been with some difficulty repressed, a second mutiny occurred.

The improved financial conditions were shown by the resumption in January, 1910, of payments on account of the Foreign Debt, eighteen months before the period allowed by the agreement of 1898, by which amortisation was suspended for thirteen years, up to June, 1911.

The position of the Federal Government in relation to the States has gradually grown stronger during this period of peace and reform. In July, 1912, a law was

passed requiring the States to obtain the Federal sanction before contracting any new loans. A new coinage was authorised in the same month. There was considerable labour unrest in Brazil during this year, culminating in serious strikes in Rio and Santos during August and at Belém in September.

A revolutionary movement occurred in Ceará early in 1914, and by March the Federal Government found it necessary to intervene. Owing to disaffection in the capital martial law was proclaimed on March 6th at Rio de Janeiro, Nictheroy, and Petropolis.

CHAPTER V

STATES AND DISTRIBUTION OF POPULATION

NORTHERN AND CENTRAL BRAZIL comprise about 80 per cent. of the total area of the Republic, but do not contain quite half the population. An accurate statement of the numbers of the Brazilian people cannot be given, for the census which was begun in 1911 was not completed, the sum of money voted for the purpose being found insufficient. The figures given are therefore approximate only, being based on the census of 1906 and the known increases since that date. The areas and approximate populations are as follows—

State.	Area in sq. miles.	Approximate Population.
Alagoas ..	22,847	800,000
Amazonas ..	741,062	400,000
Bahia ..	166,643	2,500,000
Ceará ..	40,720	1,000,000
Goyaz ..	291,901	300,000
Maranhao ..	179,641	600,000
Matto Grosso ..	539,092	245,000
Pará ..	448,479	660,000
Parahyba ..	29,190	600,000
Pernambuco ..	50,151	1,500,000
Piahy ..	117,882	425,000
Rio Grande do Norte ..	22,454	400,000
Sergipe ..	15,269	500,000
Territory of Acre	74,607	185,000
	2,739,938	10,215,000

The population of South Brazil is 12,760,743, so that the total population of Brazil is about 22,975,743.

The following is a short outline of the main features of each state. Fuller information as to the manufactures, finance, ports, railways, etc., is given in the chapters devoted to those particular subjects.

ALAGOAS.—The State of Alagôas is the seventeenth in area of the Brazilian States, with an extent of 22,847 square miles of territory. It is bounded on the north by the State of Pernambuco, on the south by the State of Sergipe, and on the east by the Atlantic Ocean. Its shape is triangular, and it runs away to an acute angle on the western side. The coast-line is 137 miles long.

The population is about 800,000, and the principal city and port is Maceio (40,000). Other cities are Alagôas (16,000), Traipu (25,000), Pilar (15,000), and União (15,000).

The principal rivers are the São Francisco, which forms the southern boundary of the State, and its tributaries. A number of less important rivers flow to the coast, which is broken up into numerous lakes and lagoons, which give to the State its name ("The Lakes").

Its main products are : Sugar (20,000 tons a year) and cotton (9,000 tons a year). Alagôas also produces coffee, rice, tobacco, maize, and other cereals. The cattle industry is prosperous, but ill-managed.

Mineral deposits of iron, lead, and copper have been proved, but not exploited.

Alagôas has a very important cotton milling industry, the mills at Pilar, União, and Santa Luzia using 3,000 tons of raw cotton every year. The State has six large sugar mills and innumerable small ones. Other industries are the drying of meat, making cigars, shoes, cotton-seed oil, etc.

Communications. Communications include the railway from Piranhas to Jatoba (52 miles), uniting the navigation of the Lower and Upper São Francisco ; that from Serra Grande to Maceio *viá* União, and from Maceio to Lourenço *viá* Vicosas. Lines are in the course of construction, uniting Maceio with Propria on the border of Sergipe (south), and with Jacuhipé on the boundary of Pernambuco (north). The São Francisco is navigated from its mouth to the great falls of Paulo Affonso, a distance of 173 miles ; and several of the coastal lakes are navigable. By means of canals, Lake Manguaba is united with Lake Do Norte ; and so communication by water is possible between the four cities of Maceio, Pilar, Alagôas, and Santa Luzia.

Principal Ports. Maceio, and Penedo on the Lower São Francisco.

AMAZONAS.—Amazonas is the largest State of Brazil with an area of 741 062 square miles. It is bounded on the north by British Guiana and the Republic of Venezuela ; on the east by Para ; on the south by Matto Grosso and the Republic of Bolivia ; and on the west by Peru Colombia, and Ecuador. It is one of the four inland States of Brazil, and has no coast-line.

The population of this vast area is estimated at 400,000 and that of the capital (the city of Manãos) at 60,000. Other important centres of population are Itacoatira, Manicoré, Humayta Maués, Canutama, and other riverside towns.

Although cocoa, cotton, and all tropical products thrive in the territory of Amazonas, the agricultural output is still quite negligible. The resource of the State is its

forests, where rubber is gathered in great quantities. Valuable timbers, medicinal and oil-bearing plants, and gums of all sorts are only a few of the natural riches of the State. Mineral riches equally vast are believed to be hidden in its soil, for deposits of iron, gold, copper, and many other metals have been found and reported from time to time. Up to the present they remain unexploited, the whole energy of the State being occupied in the gathering of rubber.

The State of Amazonas has few manufacturing industries, except pottery, woodwork, and some modest establishments for curing fish, preserving meat by drying, etc.

Communications. The State has one railway, the section of the Madeira-Mamoré line that has been finished. It is designed to provide communication along a section of the Madeira river, which is unnavigable owing to rapids. Thus Bolivian rubber can be brought by rail as well as by river to the port of Manáos. Otherwise, the State of Amazonas is innocent of railway or made road. The highway of the State is the Amazon, and the mighty affluents of that river: these are the Madeira, the Purus, the Jurua, the Jutahy, the Japura, the Rio Negro, and all their many tributaries—a network of 7,500 miles of navigable waterways.

Manáos is the chief port of a State which has all its centres of population on the river's edge, acting as river ports.

BAHIA.—Bahia is the seventh in area of the Brazilian States, with a surface of 166,643 square miles and 625 miles of coast line. It is bounded on the north by the

States of Piauí, Pernambuco, Alagoas, and Sergipe ; on the west by the State of Goyaz ; on the south by the States of Minas Geraes and Espírito Santo ; and on the east by the Atlantic Ocean.

The population is estimated at 2,500,000. The capital is Bahia (300,000), the ancient capital of Brazil, and still the third city of the Republic. Other centres of population are Alagoinhas, Barra do Rio Grande, Cachoeira (30,000), Feira de Santa Anna (32,000), Nazareth, Joazeiro, São Felix, Valença, etc.

The Upper São Francisco flows through the State, its course in Bahia being 850 miles. Other rivers of importance are the Itapicuru, the Paraguassu, the Jequirica, the Rio de Contas, the Cachoeira, the Pardo, the Jequitinhonha, and the Jucuruçu.

The principal products are tobacco (25,000 tons), cocoa (22,000 tons), sugar (12,000 tons), coffee, 275,000 sacks of 132 lb.), vanilla, cotton, maniçoba and mangabeira rubber, fruit, and cereals of all kinds. It has the principal whale fisheries of Brazil, and provides, besides, the best fishing grounds for table fish in the Republic. The cattle-rearing industry is well established and important. At the town of Feira de Santa Anna there are held periodical cattle fairs, at which it is no uncommon thing for 15,000 head of cattle to change hands.

Mineral deposits of gold, copper, silver, iron, lead, manganese, sulphur, and coal are in a more or less advanced stage of development. The export of monazite sands, which contain the thorium used in the manufacture of incandescent mantles, is the most important in the world, reaching some 3,000 tons annually.

Carbonados and precious stones of various kinds are found in many parts of the State.

Bahia is the cigar-making State of Brazil, turning out 60,000,000 cigars a year and a large quantity of prepared tobacco. The cotton mills of the State use all the locally grown cotton, and have sometimes to import raw material from Pernambuco. There are seven large and over 200 small sugar-mills in the State.

Communications. The railway lines of Bahia are 935 miles in extent, and consist of eight separate systems, running inland from different points on the coast. There are in course of construction, or planned, 1,250 miles more of railways, which will link up these scattered systems and unite them with the lines of the adjoining States. The river São Francisco is navigable throughout its course in the State, and the proposed railway lines will serve to connect the principal river ports with the coast, and so increase the transport facilities of the State. The other rivers are only navigable for short distances from their mouths.

The principal port of the State is the capital, Bahia, on the Bay of Todos os Santos. (See Chapter on *Ports and Harbours*.) Other ports are Camamu, Ilheos, Canaveiras, Porto Seguro, Alcobaça, and Caracollas. The river ports on the São Francisco are Carinhanha, Barra do Rio Grande, and Joazeiro.

CEARÁ.—The State of Ceará is thirteenth in size among the States of Brazil, with an area of 40,720 square miles. It is bounded on the north by the Atlantic Ocean, on the south by the State of Pernambuco, on the east by the States of Parahyba and Rio Grande do Norte, and on

the west by the State of Piauhy. It has a coast line of 348 miles.

It has a population of 1,000,000 inhabitants; the capital is the port of Fortaleza (60,000). Other important centres of population are the ports of Camocim and Aracahu, and the inland towns of Baturité and Sobral.

The principal river is the Jaguaribe, which has a course of 406 miles through the State. There are many smaller rivers in the rainy season, which dry up almost completely in the dry season.

The principal product of the State is cotton, the output being 15,000,000 lbs. a year. Coffee, cocoa, and sugar are also grown, and cereals of all kinds. Rubber is produced from the cultivation of the maniçoba and mangabeira trees. The pastoral industry is important, there being 1,700,000 head of cattle in the State.

The mineral resources are unexploited; but iron manganese, copper, gold, silver, mercury, zinc, antimony, rock crystal, and precious stones have been found in the State.

The industries of Ceará are confined to the milling of sugar-cane, and the preparation of tobacco and hides for the market.

Communications. The State has two good railways: One, the Baturité railway, runs inland from the capital Fortaleza through the town of Baturité to Ico, a distance of 338 miles. The other is the Sobral line, which joins the port of Camocim with the town of Sobral, and has been extended to Caratheus, a total distance of 210 miles. Both lines are in the course of extension.

GOYAZ.—Goyaz is the fourth of the States of Brazil in

area, with an extent of 291,901 square miles. It is bounded on the north by Maranhão ; on the east by Maranhão, Piauhý, Bahia, and Minas Geraes ; on the south by Minas Geraes and Matta Grosso, and on the west by Pará and Matto Grosso. It is one of the four inland States. The population is estimated at 300,000 ; this number includes many tribes of Indians who cannot be numbered.

The State capital is the city of Goyaz (25,000), a quiet little place, the development of which has been retarded by lack of communications. Other cities are Pyrenopolis (10,000), Santa Luzia (6,000), Corumba (5,000).

The rivers Araguay and Tocantins rise in the south of the State, and flow to the extreme north. They have many important tributaries in the State. In the south, the Parnahyba, with many tributaries, forms the boundary with the State of Minas Geraes.

The principal industry of the State is cattle breeding, and the annual export is 45,000 head to neighbouring States. Tobacco, cereals, and fruit are the principal agricultural products, and the forests produce rubber (manicoba and mangabeira) and a vegetable silk known as paina.

The mineral wealth of the State is very great. Diamonds, gold, and rock crystal are already produced ; and iron, silver, marble, copper, and other metals are known to exist in quantity. The development of the mineral resources of the State awaits the provision of railway communication. When that comes, it is said by those acquainted with Goyaz, that its mineral output will be second only to the great mining State of Minas Geraes.

The manufactures of Goyaz are confined to sugar milling, cheese and preserve making, and the preparation of tobacco.

Communication. The construction of a railway to the capital city of Goyaz is now in hand, and other railways are planned to open up the resources of the State. Both the rivers Araguaya and Tocantins are navigable; for canoes on the upper reaches, while the lower reaches are navigated by the steamers of companies having their headquarters in Belém of Pará. There are no roads in the State outside the cities.

MARANHÃO.—Maranhão is seventh in extent of the States of Brazil, with an area of 179,641 square miles. It is bounded on the north by the Atlantic Ocean, on the south by Piauhý and Goyaz, on the east by Piauhý, and on the west by Goyaz and Pará. It has a coast-line of 140 miles.

The population is estimated at 600,000, of whom 50,000 live in the capital city of São Luiz. The second city is Caxias (12,000); and other centres of population are São Bento (7,000), Codo, Vianna, and Graphu (5,000 each).

The State is well provided with rivers, of which the chief is the Parnahyba, which forms the boundary with the neighbouring State of Piauhý. Next comes the Itapicuru (1,060 miles) and the Mearim (685 miles). Other large streams are the Barra do Carda, the Gurupy, the Pindare, the Turyassu, the Grajahu, the Rio das Balsas, the Monim, and the Praguica.

Cotton is the State's chief agricultural product, the output being 4,000 tons a year; while minor places are taken by coffee, cocoa, sugar, tobacco, and cereals. The pastoral industry is important, and the State supplies

Amazonas with a good deal of live stock. The forest wealth is considerable, among the exports being mangabeira rubber, copaiba oil, and valuable woods. Gold, silver, copper, coal, and other minerals have been proved, but are not at present being exploited. The only manufacturing industry of any importance in the State of Maranhão is the spinning and weaving of cotton. There are, in all, fifteen establishments for this work in the State, of which ten are situated in São Luiz, the capital, and four at Caxias. São Luiz has also a manufactory of bricks and a distillery of Copaiba oil.

Communications. Only one short railway line exists, that from Caxias to Cajazeiras, 49 miles in all. A line is in course of construction between São Luiz and Caxias, a distance of 245 miles. A line to connect Caxias with Aragua has also been surveyed. The rivers are very shallow in the dry season, and only some 600 miles of navigable waterway can be said to exist in the State.

There are two ports in the State : São Luiz, the capital ; and Tutoya, at the mouth of the Parnahyba.

MATTO GROSSO.—Matto Grosso is the second in size of the Brazilian States, with an area of 539,092 square miles. It is bounded on the north by Amazonas and Pará ; on the east by Goyaz, Minas Geraes, São Paulo, and Paraná ; on the south by Paraná and the Republic of Paraguay ; and on the west by the Republic of Bolivia. It has no coast-line, being one of the four inland States.

Its population numbers 245,000 inhabitants, and its capital is the city of Cuyabá (30,000). Other large centres of population are Corumba (30,000) and São Luiz de Cáceres.

The State has two great river systems, one of which consists of a number of large Amazonian tributaries. Among these are the Guapore, the Xingu the Tres Barras, the Arinos, the Juruena, and the Araguaya. The other system consists of those rivers which combine to enter the Atlantic as the River Plate. The two most important are the Paraguay and the Paraná. The river systems running north and south meet in the highlands of Matto Grosso, and the construction of a short canal would establish a waterway through the heart of South America, from Belém to Buenos Aires.

Matto Grosso is at present a pastoral State, and the chief source of prosperity next to the herds of cattle may be found in its forest products. Rubber of all kinds and magnificent timber exist in abundance (the name of the State signifies "thick forest"). The agricultural possibilities are very great, but undeveloped sugar and cereals are grown, and a good kind of tobacco flourishes, as well as rice and coffee. The State also produces a fair quantity of maté.

In the rivers of Matto Grosso diamonds and auriferous sands are exploited. That these proceed from extensive and valuable deposits may be considered certain, but no knowledge is yet possessed of the origin of this wealth. The greater part of the State has never been explored, and there is room for mineral prospecting, which will possibly take place very soon.

Matto Grosso has a factory for making meat extract, and two Charqueadas for the preparation of "jerked" beef.

Communications. Matto Grosso has no railways at present, but the lines being constructed by the North

West of Brazil Co. and the Madeira-Mamoré railway promise to play an important part in the development of the State. The roads of the State are primitive in the extreme, and do not even provide bridges for crossing the numerous streams encountered in their progress. At present, the only communications are maintained by water, and these are necessarily slow. Thus it would be quicker to travel from Rio de Janeiro to Paris than to Corumba, the river port through which the State maintains its communications with the world outside. |

PARA comes third in extent among the States of Brazil, with an area of 448,479 square miles. It is bounded on the north by Guiana; on the south by Matto Grosso; on the east and north-east by the Atlantic Ocean and the State of Maranhão; and on the west by Amazonas.

Its population is estimated at 660,000, and that of Belém, its capital, at 170,000 inhabitants. Other cities are Bragança, Vigia, Vizeu, Chaves, Breves, Cameta (26,000), Monte Alegre, Santarem, and Obidos.

The State is watered by the Amazon and its great tributaries: the Tapajos (1,250 miles), the Xingu (1,240 miles), the Tocantins (1,650 miles) the Anapu, the Trombetas, the Jary, and the Araguary.

The main products of the State are those of its forests, particularly rubber. The forest also produces Brazil nuts, medicinal plants and oils, and timber of the highest value. In agriculture little development has been attained, but cocoa grows freely anywhere in the State, and the export has reached 3,500 tons a year. Cotton, cereals, and tobacco are also cultivated, and reward the

The pastoral industry is an important one and, like its neighbours, the North Parahyba specialises in goats.

The greatest natural advantage possessed by the State is its vast coco-nut groves, full use of which is not yet made. Iron, lead, gold, and coal have been proved to exist in the State. Parahyba has two great sugar-mills, as well as many small ones. At Mamanguape an interesting industry has been established: the drying of Mandioca root for export.

Communication. A railway line passes through the State from north to south, and branches through the capital to the port of Cabadello. One branch runs to Bananeiras and another to Campina Grande. The rivers Parahyba, Mamanguape, and Camaratuba are navigable for part of their courses by vessels of small draught.

The only maritime port of the State is Cabadello.

PERNAMBUCO is twelfth in extent of the Brazilian States, with an area of 50,151 square miles. It is bounded on the north by Ceará and Parahyba, on the south by Alagoas and Bahia, on the east by the Atlantic Ocean, and on the west by Piauh. The State has 112 miles of coast-line.

The population of Pernambuco is estimated at 500,000, of which the capital city Recife contains 250,000. Other important cities are Cabo (25,000), Garanhuns (25,000), Goyanna (28,000), Olinda (10,000), Victoria (30,000), Rio Formoso (20,000), Limoeiro (20,000), Escada (22,000), Nazareth and Palmares (15,000 each), Petrolina, Triumpho and other smaller places.

The rivers running into the sea are small, chief among

them being the Capiberibe ; but there are some important tributaries of the São Francisco, which is itself a boundary line between the States of Pernambuco and Bahia.

Pernambuco is the principal producer of cotton and sugar in Brazil. The production of sugar varies from 100,000 tons a year to 150,000 tons. Raw cotton worth nearly £1,000,000 is exported each year, and the cotton mills of the State account for 8,000 tons more of the local product annually. Coffee, cocoa, tobacco, vanilla, cereals, coco-nuts, and fruits are secondary in agricultural importance. The pastoral industry is also of great importance, and a valuable dairying industry has grown up in connection with it.

Manganese, coal, iron, saltpetre, and kaolin have been proved to exist in payable quantities in the State.

Pernambuco has ten important cotton mills, which annually consume 8,000 tons of raw cotton. It is the chief sugar State of Brazil, and counts forty-eight important sugar mills and a very large number of small establishments of the same kind. An important industry in the distillation of sugar spirit is worked in conjunction with the extract of the sugar itself.

Communication. Pernambuco has some 560 miles of railway. One line connects Recife with Maceio, the capital of its southern neighbour Alagoas. Another establishes connection between the capital and the inland city of Garanhuns. Yet another runs from Recife inland to Pesqueira, and is to be extended to the city of Triumpho, on the border of Parahyba, and so on to Crato in Ceará, and finally to pass through the State of Piahy, to Tocantins in Goyaz. The river São

Francisco is navigable on its whole extent along the borders of the State.

In addition to Recife, Pernambuco possesses two good ports for coastal trade in Tamandare and Goyanna.

PIAUHY is eighth in extent of the Brazilian States, with an area of 117,882 square miles. It is bounded on the north by the Atlantic Ocean, on the south by Bahia, on the east by Ceará and Pernambuco, and on the west by Maranhão. It has a coast-line of only 43 miles.

The population of the State is estimated at 425,000 inhabitants, and that of the capital city of Therezina at 30,000. Next comes the old capital, Oeiras (22,000); Parnahyba (12,000), Amarante (10,000), Picos, Parnagua, Campos Salles, Campo Major, and other smaller places.

The principal river is the Parnahyba, the tributaries of which water the State. The chief of these are the Urussuhysinho, the Urussuhy Assu, the Gurgueia, the Caninde, the Poty, and the Longa.

The principal agricultural products are cotton, tobacco, maniçoba, rubber, sugar, and cereals. The pastoral industry is important, and, in addition to vast herds of cattle, the State has large flocks of goats, the skins of which form no inconsiderable item among the exports.

The forest wealth is also very appreciable, for rubber of both the mangabeira and maniçoba variety grows wild, and the timber of the State is of great value. The forests also yield a large annual supply of the valuable carnauba wax, as well as medicinal plants and gums.

Iron, lead, copper, sulphur, silver, and precious stones are numbered among the minerals known to exist in the

State. The manufactures of Piauhy are confined to the weaving of cotton fabrics and the tanning of leather.

Communication. The State has no railways, but the extension of the Baturité railway from Caratheus, in Ceará, to Therezina, has been approved and is being constructed. A branch joining Therezina with the port of Amarração is also projected. The rivers are of little value for purposes of navigation, except the Parnahyba, which is a good river in the rainy season, but difficult in its middle and upper courses during the dry season.

Amarração is the only maritime port of the State ; but a good deal of the export trade of the State is conducted from the port of Tutoya, in the neighbouring State of Maranhão.

RIO GRANDE DO NORTE.—This State is seventeenth in extent of the Brazilian States, with an area of 22,454 square miles. It is bounded on the north by the Atlantic Ocean, on the south by Parahyba, on the east by the Atlantic Ocean, and on the west by Ceará. It has a coast-line of 290 miles.

The population is 400,000, of which the capital city (Natal) contains 20,000. Other cities are Ceará-Mirim (14,000), Mossoro (14,000), Assu (910,000), and Maceio.

The rivers of the State are unimportant, but the estuary of the Assu is navigable for 28 miles from its mouth.

The principal agricultural product is cotton, which amounts to 11,000 tons a year ; and 26,000 tons of sugar. A valuable culture is the Maniçoba tree, from which 180 tons of rubber are obtained annually.

The pastoral industry is one of the backbones of the

State, and the flocks of goats are hardly less valuable than the herds of horned beasts.

The forests supply large quantities of carnauba wax and vegetable oils ; and the State has natural salines, which supply the bulk of the salt used in South America.

Rio Grande do Norte has one important cotton mill, which annually turns out 2,000,000 yards of fabric and 200,000 lbs. of thread. An establishment for expressing cotton-seed oil at Carnaubinha is conducted on a large scale, and absorbs most of the seed of the State. The salt works of the State are important, the annual export being 100,000 tons. Rio Grande do Norte also supplies all the northern States of Brazil with dried and salt fish. Hammocks and hats of the fibre of the carnauba palm are also manufactured, as well as candles from the wax of the same tree.

Communication. The State has 194 miles of railways, in two lines. One unites the capital, Natal, with the port of Cabadello, in the State of Parahyba ; and the other is an extension from Natal, through Ceará-Mirim, and Taipu. This line is being extended through the State to the town of Caico.

Natal, the capital, is one of the best ports of North Brazil ; other ports are Macau and Areia Branco.

SERGIPE.—Sergipe is the smallest of the Brazilian States, with an area of 15,269 square miles. It is bounded on the north by Alagôas, on the south and east by the Atlantic Ocean, and on the west and south-west by the State of Bahia. Its coast-line is 124 miles long.

The population of the State is 500,000 ; that of its capital city, Aracaju (32,000). Other centres of population

are Estancia (15,000), Itabaiana (10,000), Larangeiras (12,000), Maroim, and Lagarto.

The river São Francisco is the northern boundary of the State ; other rivers are : The Cotinguiba, the Vasa Barris, the Japarutuba, the Siriry, and the Santa Isabel.

Its main products are sugar (20,000 tons), cotton (4,000 tons), and rice. Other products are coffee and maize. The cattle-raising industry is growing in importance and value.

Mineral deposits of gold, silver, and saltpetre have been proved, and precious stones of many kinds have been discovered in the State ; but these treasures are not systematically worked.

In Sergipe the manufacturing industries are well established. Cotton spinning is represented by a large mill in Aracaju, where 550 workers are employed ; and there are three smaller establishments as well. Fifteen large, and many small, sugar mills exist in the State ; and Sergipe has also shoe factories, large salt works, soap and candle factories, tanneries, and establishments for expressing vegetable oils.

The State at present suffers from the lack of the means of transport and communication. The only navigable river is the São Francisco (see *Alagôas*), and there is no railway line. A line from Propria, in the north, to Timbo in the State of Bahia, will traverse the State from north to south, and link up with Aracaju, the capital. It is now in course of construction.

The principal port is Aracaju, the capital, which cannot accommodate vessels of more than 8 ft. draught. There are two other ports, Estancia and São Christovão,

but both are choked by sand-bars. The only outlet for the products of the State at present is the river São Francisco, and the completion of the railway line will make a great difference to the commerce of Sergipe.

The TERRITORY OF ACRE has an area of 74,607 square miles. It is bounded on the north by Amazonas, on the south by Bolivia and Peru, on the east by Bolivia, and on the west by Peru.

It has a population of 185,000, and is divided into three prefectures: Acre, High Purus, and High Jurua. The capitals of these are Rio Branco (2,000), Madureira (4,000), and Cruzeiro do Sul (2,000). Another newly-founded town is Pennapolis, which is rapidly growing in importance.

The principal product is rubber, but the forests contain all sorts of valuable woods and medicinal plants. The principal rivers are the Purus, the Acre, and the Jurua; and their tributaries.

CHAPTER VI

CONSTITUTION AND DEFENCE

THE "United States of Brazil" form a republic of the federal type, organised in its main outlines on the model of the United States of North America. The Constitution at present in force was adopted on 24th February, 1891, by the representatives of the nation assembled in constituent Congress. The document is divided into five main chapters (or "titles") and ninety-one articles, and deals exhaustively with (1) the Federal organisation; (2) the privileges and disabilities of the States; (3) the municipality system; (4) the conditions and privileges of citizenship; and (5) certain general provisions.

I. The FEDERAL ORGANISATION is declared indissoluble. The former "provinces" become "States," and the "municipal district" of Rio de Janeiro becomes, pending the establishment of any new capital, the "federal district." The States have power to combine or subdivide; to levy taxation on exports to foreign countries (but not to States of the Union), on real estate and transfer of property, and on industries; and to levy certain local stamp duties and charges on postal and telegraph service. The Union alone may levy duties on imports and on foreign vessels, with general stamp duties and general postal and telegraph charges. The Union may not interfere in the States except to deal with foreign attack, civil war and disorder, the maintenance of the Federal Union, and the execution of federal decrees.

There are three main branches of the Federal Government, viz., the *Legislature*, the *Executive*, and the *Judiciary*.

(a) The LEGISLATURE, or Congress, consists of two Houses: the Chamber of Deputies, and the Senate. It is to meet annually on 3rd May for a session of four months, but may be prorogued or summoned to an extraordinary session. Each member receives a salary and travelling expenses.

The *Chamber of Deputies* consists of 212 members, elected in the States by direct vote for three years: one for each 70,000 people and not less than four for each State. The present representation is as follows—

Minas Geraes	..	37	Amazonas	..	..	} 4 each
Sao Paulo	..	22	Espirito Santo	..	..	
Bahia	..	22	Goyaz	..	..	
Rio de Janeiro	..	17	Matto Grosso	..	..	
Pernambuco	..	17	Paraná	..	..	
Rio Grande do Sul	..	16	Piauhý	..	..	
Ceará	..	10	Rio Grande do Norte	..	..	
Federal District	..	10	Santa Catharina	..	..	
Maranao	..	7	Sergipe	..	..	
Pará	..	7				
Alagôas	..	6				
Parahyba	..	5				

Deputies must be Brazilian citizens of over four years' standing and on the voting register. Legislation dealing with taxation or the army and navy, or charges against the President or Ministers, may only be initiated in the Chamber of Deputies.

The *Senate* consists of 63 members (three for each State and three for the federal district), elected in the States by direct vote for nine years; one-third is renewed every three years. As a legislative body, it is presided over by the Vice-President of the Union; as a judicial body, by

the president of the Federal Supreme Court. Senators must be Brazilian citizens of over six years' standing, and over 35 years of age.

The privileges and disabilities of members of Congress, and the exclusive and other functions of Congress, are explicitly defined.

(b) The EXECUTIVE POWER is vested in the President (or his substitutes in certain cases). His qualifications are identical with those of a senator. He is elected, with a vice-president, by direct vote and by absolute majority for a term of four years, and may not be re-elected for the next ensuing term. His powers include the choice and dismissal of Ministers; the command in person or by deputy of the Army and Navy; the administration of these forces; and the appointment of federal judges, the Federal Supreme Court, diplomatists, and consuls. He may declare a state of siege, and negotiate treaties and conventions for reference to Congress.

He is assisted and advised by a Cabinet of seven, who each preside over one department, and whose signature is requisite to Acts affecting their department. These departments are the following—

(1) Finance; (2) Justice, Interior, and Public Instruction; (3) War; (4) Marine; (5) Foreign Affairs; (6) Communications and Public Works; (7) Agriculture, Industry, and Commerce.

Ministers may not be members of Congress, nor appear before it, nor communicate with it save by letter or by personal intercourse with its committees. They are not responsible to Congress or the law courts for advice given to the President; but they are responsible for their own

actions, and are liable to impeachment before the Supreme Court for any infringement of the law.

The President, similarly, may, on the decision of the Chamber of Deputies, be impeached before the Supreme Court (in case of common juries) or before the Senate (in case of criminal abuse of his constitutional powers).

(c) *The Judiciary.* This consists—for the Union—of

(1) The Federal Supreme Court, which sits in the capital (Rio de Janeiro). It has fifteen judges, appointed subject to the approval of the Senate, by the President. They are appointed for life, at a fixed salary. They are partly a court of exclusive jurisdiction (*e.g.*, for international or inter-State disputes, conflicts between federal courts, and the trial of president, ministers, or diplomatic agents), and partly a court of appeal and revision for the lower federal courts.

(2) Federal courts erected wherever necessary by Congress.

In addition to these federal tribunals, each State has its own courts, which deal with all matters not specifically federal according to the special code of the State. The municipalities have their own magistrates, elected for four years, dealing mainly with cases not involving money above a certain amount.

II. *The STATES.*—The States are organised in harmony with the republican ideal of the Union. Apart from the carefully delimited operations of the Union, each State enjoys local autonomy, with its own legislature, executive, and judiciary. It has a State capital, a Congress (sometimes of two Houses, sometimes of one), a president or governor and ministers, and a system of law courts

administering the State laws. From the State courts there is no appeal except (a) in constitutional questions affecting the Union; (b) in actions of *habeas corpus*; (c) in regard to the property of deceased foreigners, where not specifically dealt with by treaty or convention: in such cases an appeal lies with the Federal Supreme Court. The States are forbidden to make war on one another, or to refuse the currency or notes authorised by the Union.

The Federal District is administered by a council elected by the citizens, the executive power being vested in a prefect appointed by the President for a period of four years.

While the State presidents and members of Congress are elected by majority vote, as in the case of the Union, the municipal magistrates are nominated by the President or Governor, and are not removable save by judicial sentence.

III. The MUNICIPALITIES.—The States are subdivided into districts called municipalities, which possess local autonomy in matters of their own concern (*e.g.*, statistical records, sanitation, paving, road-making, lighting, water-supply, etc.). They may be associated with the State or Union in other matters, such as education. (There are, in Brazil, 3,161 municipalities.)

IV. CITIZENSHIP.—Citizens over 21 years of age, duly registered, have voting rights; but the following may not be registered: (1) Beggars; (2) illiterates; (3) soldiers on the strength; (4) members of monastic or other orders, subject to vows of obedience implying the surrender of individual liberty.

In the "Declaration of Rights," full freedom is granted

for the right of public worship and of holding property for that purpose ; civil marriage alone is recognised by the republic, and is gratuitous ; no connection is allowed between any sect or church and the Union or the State Government, nor may any official aid be given ; banishment, the death penalty, and the galleys are abolished ; and the usual personal rights and rights of property are enacted.

V. The GENERAL PROVISIONS deal with such matters as internal disorder, revision of judicial sentences, the Army and Navy, the amendment of the Constitution, payment of public debt, and auditing of accounts. The clause abolishing compulsory recruiting for the Army has been superseded by the law of January, 1908 (see *Army*, below). It is enacted any citizen invested with the functions of any one of the three federal powers may not exercise those of another ; hence a minister of State (belonging to the Executive) may not be a member of either House of Congress (Legislature) or of the Supreme Federal Council (Judiciary).

DEFENCE

THE ARMY.—By the law of January 4, 1908, every Brazilian citizen is liable to military service from his 21st to the completion of his 44th year, as follows : Two years in the ranks, seven in the reserve, seven in the Territorial Army, four in the National Guard, and four in its reserve.

The Army contains—

Infantry : 15 regiments of 3 battalions of 3 companies each ; 12 battalions of chasseurs. Each battalion has a machine-gun section of 3 mitrailleuses.

Cavalry : 9 line and 3 independent regiments, of 4 squadrons each ; 5 regiments of 2 squadrons each for divisional cavalry ; 12 sections of scouts.

Artillery : Field artillery, 5 regiments, each of 3 divisions of 3 batteries, with 4 guns each ; 5 Howitzer batteries of 6 guns each ; 2 divisions of mountain guns, with 3 batteries each (4 guns) ; 3 divisions of horse artillery, with 3 batteries each (4 guns) ; garrison artillery, 8 battalions ; heavy artillery, 36 batteries ; engineers, 5 battalions.

The peace establishment is 32,000, with 2,626 commissioned officers ; the war strength is over 300,000. The country is divided into 13 Territorial districts. Five "strategical" brigades and 3 cavalry brigades are stationed near the frontiers of Paraguay, Argentina, and Uruguay.

There is also a force of 20,000 gendarmerie.

THE NAVY consists of upwards of 30 vessels, including 2 "Dreadnoughts" of 1907 (the *Minas Geraes* and the *São Paulo*), 2 older battleships of 1898, 2 scouts, 3 torpedo cruisers, 2 gunboats, 10 Yarrow and 4 other destroyers, with submarines, school ships, and other vessels. The "super-Dreadnought," *Rio de Janeiro*, was sold on completion to Turkey, and never formed part of the active Navy.

The *personnel* includes 515 officers, 6,000 seamen, 1,500 firemen, 600 marines, and 5,000 boys.

The chief naval arsenal is at Rio de Janeiro ; there are also naval bases at Pará, Bahia, Pernambuco, and Ladario de Matto Grosso (a river arsenal on the Upper Paraguay).

CHAPTER VII

FINANCE : FEDERAL AND STATE

FINANCE.—The outstanding features of Brazilian national finance are a rapidly rising revenue and an expenditure that is increasing even more rapidly. The result is, of course, a public debt that is growing every year.

The revenue has risen from (in round figures) £21,000,000 in 1902 to £37,000,000 in 1911, and during the same period the expenditure has risen from £20,000,000 to £44,000,000.

In the interim there have been one or two years when receipts have been made to balance expenditure, but the tendency to over-expenditure has been evidenced by an average deficit of over £2,000,000 per annum.

The main sources of national revenue may be approximated as follows—

Import duties	...	...	£18,000,000
Internal revenue	...	...	5,000,000
Consumption taxes or Excise duties	..	..	3,000,000
Export duty (Acre rubber)	..	..	1,000,000

From these sources is derived three-fourths of the annual revenue ; and the bulk of the remainder is ear-marked for special purposes, such as the construction of harbours, etc. In his Budget speech for 1914, the Minister of Finance declared that these taxes were as much as the country and its trade could bear, and that the only way of squaring finances was a reduction of expenses.

The Brazilian expenditure is divided into two classes by Brazilian finance experts : Ordinary expenditure and

extraordinary expenditure. Ordinary expenditure is the recurring cost of administration, etc. ; while extraordinary expenditure covers the money spent in providing for emergencies which may not be expected to repeat themselves, such as the construction of railways, the building of warships, and similar contingencies. These extraordinary expenditures are calculated to average some £4,000,000 a year ; thus the ordinary expenditure is less than revenue by nearly £2,000,000 a year. The extraordinary expenditure has, however, been creeping up to a figure far beyond £4,000,000 a year ; and in proposing his Budget for 1914, the Minister for Finance revealed a deficiency for 1913 amounting to £7,200,000. His proposals for 1914 showed a probable balance between expenditure and income, the Minister remarking—

“ Brazil is a new country and full of resources without doubt, but it is not practical that it should be overwhelmed by a burden greater than its forces. It is requisite that there should be a pause in the headlong rush of public expenditure, so that the nation may have time to recover and reconstruct its elementary life and its credit.

“ It is sufficient to realise that the public revenue cannot be augmented by fresh imposts to comprehend easily that unless this artificial life cease the country will shortly become asphyxiated by loans and unable absolutely to meet its engagements and charges ; consequently, it is incumbent on public men to come to its aid, by adopting the only course feasible : that of positive economies and restricting with a hand of iron all superfluous outlays.”

The application of the Minister's speech will be grasped when it is stated that on the 30th June, 1912, the sum of Brazilian indebtedness was £200,000,000 distributed as set out on next page.

External debt	..	..	£ 95,000,000
Consolidated Funds	..	..	45,000,000
Liquid debt	..	..	18,000,000
Paper Issue	..	..	41,000,000

On this debt interest amounting approximately to £7,750,000 has to be paid annually. For the extinction of this debt no provision is made, except in regard to the paper issue, which will be dealt with presently.

In the meantime it has to be pointed out that the National Debt represents only a part of Brazilian indebtedness, for the finances of the States, in some cases, show a similar tendency to over-expenditure.

This has also been met by borrowing, so that the sum of Brazilian State indebtedness at the end of 1911 had reached the sum of £66,346,800. To this must further be added the sum of municipal indebtedness, which, according to the last published figures, totals £10,298,720. The total public obligation of Brazil, therefore, exceeds in amount £275,000,000; while up to the present the prosperity of the country is dependent, in the main, upon the maintenance of the prices of its two main commodities: coffee and rubber. The irregularity of these commodities in the market affects the value of all Brazilian securities very rapidly, and accounts for the uneasiness created by Brazilian financial methods.

Inextricably interwoven with Brazilian finance is the question of the Brazilian currency. Brazil has no gold coinage, but a paper one, which in the markets of the world is worth a good deal less than its face value. The milreis is nominally worth 27 pence, but its value in international commerce is at present 16 pence. This

difference between the nominal value of the paper money of the country and its value as a medium of exchange is due to the over-issue of notes in the period which followed the proclamation of the republic. At that era, in 1889, the exchange value of the milreis note was above par, for it stood at $27\frac{1}{2}$ pence. In April, 1898, it had fallen to $5\frac{1}{2}$ pence, and the credit of Brazil seemed shattered.

The first step to a restoration of credit was made in 1898, when the creditors of the country agreed to accept bonds as interest in the place of cash. As the bonds were issued, a nominal cash payment for the same amount in paper was made at the face value of 18 pence per milreis. This paper was immediately destroyed, and thus the paper currency in the country was reduced by each payment of interest; for the further issue of paper money was prohibited by law. In 1898 there was paper money in circulation of the face value of £86,500,000; by the end of 1912 it had been reduced to £67,500,000, paper of the nominal value of £19,000,000 having been destroyed.

The law of the 20th July, 1898, which stopped the issue of paper money, also established a fund for the guarantee of the paper circulation, by setting aside 5 per cent. of all federal receipts in gold for that purpose. This fund had mounted by the end of 1911 to £12,500,000; but the *Economic Annual of Brazil* of 1911 remarks of this fund that, succeeding governments having applied the money to meet extraordinary expenses, its existence remains almost theoretical.

The funding loan and the check to the issue of paper currency had a good effect on the rate of exchange, and that began to rise immediately. From $5\frac{1}{2}$ pence in 1898

it rose to an average of 11½d. in 1901 and to 15d. and over in 1905. Since 1911 it has been 16d., and sometimes a little better, except during the crisis of the early part of 1914, when it dropped to 15¼d. for some weeks.

To maintain a stable rate of exchange was the next problem which confronted the Brazilian financiers. For this purpose, the Caixa de Conversion was instituted in December, 1906, and the issue of convertible paper currency was begun. The rate of exchange was then fixed at 15 pence, and paper was issued by the Caixa at this rate in return for gold. This institution at once steadied the rate of exchange. For, when the rate was above 15d., local holders of gold at once went to the Caixa and exchanged their gold for convertible paper, making a profit on the transaction. When the exchange fell below 15, they returned the paper and withdrew the hoarded gold. Since the establishment of the Caixa, it has been possible to maintain a stable rate of exchange. In 1911 it was possible to increase the rate of exchange to 16 pence, at which rate the convertible paper of Brazil is now exchanged at the Caixa. On the 31st December, 1912, the convertible notes in issue were worth £24,675,000, and the inconvertible paper had a face value of £67,500,000 or an exchange value of £40,500,000.

Another financial measure of the Government merits brief mention here. It commenced in 1900, since when a certain proportion of the Customs import duties have been collected in gold. In some cases the proportion is 35 and, in others, 50 per cent. Thus the Government is always supplied with the necessary gold for its payments abroad.

These things being understood, it is possible to present the Brazilian Budget proposals for 1914 in milreis. Milreis in gold can be reduced to pounds sterling approximately by dividing by 9, and milreis paper by dividing by 15.

The revenue for 1914 is estimated at 132,584,884\$888 gold and 372,046,000\$ paper; that is—

In gold—				\$
Ordinary revenue	..	..	..	107,294,884\$888
Ditto with special application	..	..	..	25,290,000\$
Total				132,584,884\$888
In paper—				
Ordinary revenue	..	..	..	352,196,000\$
Ditto with special application	..	..	..	19,850,000\$
Total				372,046,000\$

equalling, in paper and gold, approximately £39,600,000.

The expenditure for 1914 is estimated at 93,385,691\$234 gold and 433,153,777\$535 paper, as follows—

In gold—				
Ministry of Justice and the Interior				13,000\$
Ministry of Foreign Affairs	..	..	..	2,932,988\$991
Ministry of Marine	..	..	..	500,000\$
Ministry of War	..	..	..	300,000\$
Ministry of Roads and Public Works				10,660,859\$136
Ministry of Agriculture, Industry and Commerce	..	..	..	1,050,000\$
Ministry of the Exchequer	..	..	..	52,638,843\$107
				68,095,691\$234
Application of the special revenue..				25,290,000\$
				93,385,691\$234

In paper—

Ministry of Justice and the Interior	48,935,221	\$392
Ministry of Foreign Affairs	2,323,600	\$
Ministry of Marine	44,614,040	\$648
Ministry of War	77,715,355	\$427
Ministry of Roads and Public Works	111,248,461	\$356
Ministry of Agriculture, Industry, and Commerce	24,287,147	\$158
Ministry of the Exchequer	109,179,951	\$554
	418,303,777	\$535
Application of the special revenue..	14,850,000	\$
	433,153,777	\$535

an expenditure, in paper and gold, amounting approximately to £39,264,000.

From which its deduced that the receipts in

Gold being	132,584,884	\$888
And the estimated expenditure ..	93,385,691	\$234
	39,199,193	\$654
The balance will be	372,046,000	\$
The receipts in paper being ..	433,153,777	\$355
and the estimated expenditure ..	61,107,777	\$355
The deficit will be	66,148,639	\$246
Comparing, however, with this deficit the amount resulting from the con- version of the balance in gold of 39,199,193 \$654 into paper at an exchange of sixteen pence ..	5,040,861	\$891

or, in English money, £336,000 approximately.

An announcement at the end of 1914 that these estimates had been realised would certainly restore to some degree the confidence in Brazilian finance, which had been shaken during 1913 by the rising deficits and national indebtedness.

Another cause for uneasiness as to Brazilian finance was the great fall in price during 1913 of the two most important Brazilian exports: rubber and coffee. This may be illustrated by the export figures for the first eleven months of 1913, as compared with those for the corresponding period of 1912, the official statement being—

	Quantity.		Value.	
	1912.	1913.	1912.	1913.
Coffee—bags	10,465,435 of 132 lb.	11,593,693	40,516,006 £	35,995,465 £
Rubber—tons	38,372	32,978	14,601,012	9,545,060

Thus over a million more bags of coffee were exported in 1913, but the value shows a decline of £4,500,000 in round figures; while the rubber shows a decline of some 5,000 tons in production and some £5,000,000 in value.

STATE FINANCES.—The States of Northern and Central Brazil do not at present show the tendency to exceed their revenue by their expenditure, which marks the more enterprising States in South Brazil. With one exception, that of Pernambuco, they all contrive at least to balance their outgoings with their receipts, and in several cases manage to show a surplus. This financial equilibrium is only maintained by the imposition of heavy export taxes on all commodities grown for sale abroad, and by correspondingly heavy taxes on business concerns. If one compares the 14 per cent. on cocoa, and the 12 per cent. on tobacco levied by Bahia on its staples, with the comparatively light imposts that are

exacted in South Brazil, an idea can be gained of the price paid by the producer for this financial soundness.

Nevertheless the State indebtedness of the north has been kept within bounds, and the whole does not amount to £20,000,000 as compared with the £47,000,000 of the seven States of the South.

The following tables show the financial positions of the Northern States and their total indebtedness—

State.	Revenue.	Expenditure.	Surplus.	Deficit.
Alagôas	160,000	160,000	—	—
Amazonas	1,200,000	1,160,000	40,000	—
Bahia	600,000	600,000	—	—
Ceará	240,000	240,000	—	—
Goyaz	40,000	40,000	—	—
Maranhão	160,000	160,000	—	—
Matto Grosso	240,000	160,000	80,000	—
Pará	1,240,000	1,160,000	80,000	—
Parahyba	200,000	160,000	40,000	—
Pernambuco	760,000	960,000	—	200,000
Piauí	80,000	80,000	—	—
Rio Grande do Norte	80,000	80,000	—	—
Sergipe	120,000	120,000	—	—
Territory of Acre	—	—	—	—

The State debts are—

State.	External.	Internal.	Floating.	Total.
Alagôas	£ 500,000	£ 40,000	£ 2,280	£ 542,280
Amazonas	3,360,000	1,000,000	1,540,200	5,900,200
Bahia	1,895,840	1,170,400	822,250	3,888,490
Ceará	600,000	—	6,000	606,000

The State debts—*continued*.

State.	External.	Internal.	Floating.	Total.
	£	£	£	£
Goyaz ..	—	29,320	12,840	42,160
Maranhão..	800,000	176,400	147,360	1,123,760
Matto Grosso	—	113,080	92,040	205,120
Pará ..	2,255,320	—	123,400	2,378,720
Parahyba ..	—	18,680	—	18,680
Pernambuco	2,391,360	1,448,440	119,440	3,959,240
Piauhý ..	—	16,640	5,800	22,400
Rio Grande do Norte	350,000	10,680	80	360,760
Sergipe ..	—	75,800	3,400	79,200
Territory of Acre ..	—	—	41,640	41,640
	12,152,520	4,099,440	2,916,730	19,168,690

The sum of municipal indebtedness in the North is not great, the following being the items—

Municipality.	External.	Internal.	Total.
	£	£	£
Recife	400,000	20,640	420,640
Belem	1,555,600	—	1,555,600
Bahia	363,160	—	363,160
	2,318,760	20,640	2,339,400

The following is a brief review of State finance—

Alagoas.—Revenue and expenditure, £175,000 ; debt (external), £500,000 ; internal and floating, £42,280. Total, £542,280.

Export duties: *ad valorem* cotton 9%, sugar 6%, coffee 10%, cotton-seed 10%, hides 14%, woods 25%, tobacco 10½%, skins 10%, and an additional impost of 30% of the amount paid in duty.

Amazonas.—Revenue, £1,200,000 ; expenditure, £1,160,000 ; surplus, £40,000. Debt : external, £3,360,000 ; internal, £1,000,000 ; floating, £1,540,200. Total, £5,900,200.

Export duties on rubber 7% to 20%, according to the quality ; and in addition a surtax of 20% of the value of *ad valorem* duty payable.

Bahia.—Revenue, £637,000 ; expenditure, £620,000 ; surplus, £17,000. Debt : external, £1,895,840 ; internal, £1,000,000 ; floating, £1,540,200. Total, £3,888,490.

Export duties : cocoa 14%, tobacco 12%, cigars and cigarettes 5%, rubber 9%, timber 22%, fibres 5%, hides 14%, Monaxitic sands 25%, Manganese 5%, gold 2%, copper diamonds, carbonados, and copper 5%.

Ceará.—Revenue, £260,000 ; expenditure, £243,000 ; surplus, £17,000. Debt : external, £600,000 ; floating, £6,000. Total, £606,000.

Export duties : coffee $\frac{1}{2}$ to 6%, rubber 1d. to 3d. a pound, sugar 3 to 5%, tobacco 6 to 9, hides from 1s. 4d. to 2s. each, and a surtax of 5%.

Goyaz.—Revenue, £40,000 ; expenditure, £40,000. Debt : internal, £29,320 ; floating, £12,840. Total, £42,160.

Export duties : cotton 6%, sugar 6%, rubber 2d. a lb., hides 5d. each, tobacco 1d. a lb., skins 5d. each. There is in addition a surtax of 10%.

Maranhão.—Revenue, £182,000 ; expenditure, £233,000 ; deficit, £51,000. Debt : external, £800,000 ; internal, £176,400 ; floating, £147,360. Total, £1,123,760.

Export taxes : coffee about 1d. a lb., a tax is also levied upon each hide exported from 1s. 4d. to 2s ; a surtax of 15% is also levied.

Matto Grosso.—Revenue (approximate), £240,000 ; expenditure, £160,000 ; surplus, £80,000. Debt : internal, £113,080 ; floating, £92,040. Total, £205,120.

Export duties : rubber 20%, rubber exported *via* the Amazonian ports 23%, refined rubber 25%, cocoa 12%, coffee 5%, cotton and cotton-seed 6%, hides 12%, tobacco 5%, skins 12%, wood 5%, dried meat 1s. 8d. a cwt.

Pará.—Revenue, £1,270,000 ; expenditure, £1,170,000 ; surplus, £100,000. Debt : external, £2,255,320 ; floating, £123,400. Total, £2,378,720.

Export duties : rubber 15 to 20%, tobacco 4d. a lb., hides 12 to 17%, and a surtax of $2\frac{1}{2}\%$.

Parahyba.—Revenue, £217,000 ; expenditure, £170,000 ; surplus, £47,000. Debt : internal, £18,680. Total, £18,680.

Export duties : cotton 6%, sugar 3%, rubber 6%, cocoa 5%, coffee 5%, cotton-seed 10%, hides, 10%, tobacco 10%, wood 10%, skins 10%, and a surtax of 10%.

Pernambuco.—Revenue, £787,000 ; expenditure, £970,000 ; deficit, £183,000. Debt : external, £2,391,360 ; internal, £1,448,440 ; floating, £119,440. Total, £3,959,240.

Export duties : cotton 10%, sugar for other states 9%, for foreign export 2%, rubber 2%, coffee 2%, cotton-seed 9%, hides 20 to 25%, tobacco 2%, skins 8d. each, dried meat 2%, and a surtax of 10%.

Piauhy.—Revenue, £118,000 ; expenditure, £100,000 ; surplus, £18,000. Debt : internal, £16,640 ; floating, £5,800. Total, £22,440.

Export duties : rubber 8 to 12%, tobacco 10 to 15%, hides 12 to 17%, and a surtax of 10%

Rio Grande do Norte.—Revenue, £83,000 ; expenditure, £88,500 ; deficit, £5,500. Debt : external, £350,000 ; internal, £10,680, floating £80. Total £360,760.

Export duties : rubber 8 to 12%, sugar 6 to 9%, tobacco 3 to 5%, hides from 1s. 4d. to 2s. each, and a surtax of 10%.

Sergipe.—Revenue, £144,000 ; expenditure, £135,000 ; surplus, £9,000. Debt : internal, £75,800 ; floating, £3,400. Total, £79,200.

Export duties : cotton 8%, sugar 7%, coffee 8%, hides 12%, skins 12%, salt, 10%.

CHAPTER VIII

SOCIAL CONDITIONS

SOME account of the social conditions of Brazil, as far as they affect the foreigner who may wish to dwell there, or who may have business transactions with Brazil, will be of value. It must be remembered that the Brazilian race is the outcome of the fusion of the original colonising Portuguese with the aboriginal Indians, a third element having been introduced by the importation of negro slaves. These were afterwards freed, and have formed a component part of the Brazilian race.

The language of the country is Portuguese, and the customs are those of the Latin races, modified to some extent by the climate and the conditions of living. The immigration which has taken place from Europe into Brazil has been mainly from the peoples of the Latin races, who are readily absorbed into the mass of Brazilian citizens.

RIGHTS OF FOREIGNERS.—The laws of the country are designed to place the foreigner upon an equal footing with the citizens of the country. To the foreigner is denied nothing except political rights, and these are granted to him as soon as he becomes naturalised. He may exercise the right of assembly and of a free expression of opinion ; he may openly denounce the abuse of authority, and demand that responsibility be placed upon those responsible for such abuses.

His house is his inviolable retreat ; nobody may enter

it by night without his consent, except for preventing accident or crime ; nor by day, except in due legal form. The secret of his correspondence is inviolable. He is entitled to the benefit of the free and secular education which the States provide, and may follow any creed or religion openly and publicly. Marriage is a civil ceremony, but he may celebrate it also with any religious ceremony that may accord with his belief.

The foreigner has the right in time of peace of access to the territory of the nation, or of leaving it with his fortune and his goods, without the necessity of a passport. In every way, Brazilians and foreigners are equal in the sight of the law, except that in some cases the foreigner has the advantage of being able to plead the laws of his own country. He may exercise any intellectual or industrial occupation without any further let or hindrance than the proof of the qualifications of such profession demanded in all civilised communities.

The Constitution of Brazil is, therefore, as liberal to the foreigner as that of any country in the world.

COST OF LIVING.—The dearness of living in all parts of Brazil is notorious. The British Consul at Rio de Janeiro, in a recently-issued report, estimates that it costs just three times as much to live in that city as in one of the capitals of Europe. The causes are the high rents charged ; the heavy tariff on all imports ; the costliness of food-stuffs, owing (among other reasons) to high railway freights ; and, finally, the natural extravagance of the Brazilians, which sets a standard of expenditure out of proportion to the means of the individuals.

In the book dealing with *South Brazil*, it has been

shown that in some, at least, of the large cities of the South there are mitigating circumstances ; and that the proximity of colonies of industrious European immigrants makes the necessities of life very cheap in such cities as Curitybá, Porto Alegre, etc.

In North Brazil there are none of these colonies, and the very necessities of life are uniformly dear. In Bahia, one of the most fertile States of the Republic, the agricultural class consists almost entirely of freed slaves of negro blood and their negro descendants. These people occupy some of the most fertile land in the world, but refuse to do more than grow the few necessities for their own existence ; and these are very simple. For the rest, they are content to live in pleasant idleness, ignoring the requirements of such cities as Bahia, Recife, and São Luiz. Hence meat, bread, vegetables, fish, and similar commodities are always dear in those cities ; rents are high ; and all imported articles dear. Consequently, living is even more expensive in the cities of the North than in the South. In the Amazonian States, the zenith of costliness is reached. Here there is no agricultural class at all, and food-stuffs have to be imported from other States of the Republic. The whole population of these States is engaged in trading for rubber, or in some way in the collection of the only product of these States. The soil is fertile and easily cultivated, and the rivers teem with fish. But all commodities are dear ; and the further away from the mouth of the Amazon one travels, the higher are the prices of commodities ; until in the Territory of Acre the simplest necessities are bought only at prohibitive prices.

The following are the current prices of commodities and of rents in the chief cities of North Brazil—

Hotels. Bahia, from 15s. to 25s. a day; Recife, from 12s. 6d. to 20s. a day; Maranhão, from 12s. 6d. to 20s. a day; Belém, 20s. to 25s. a day; Manáos, 25s. to 30s. a day.

Rents. Bahia: a flat of several rooms costs £10 a month, and a comfortable house from £15 to £20 a month. Prices are not quite so high in Recife, and a good house in Maranhão can be rented for about £10 a month. In Belém and Manáos prices of houses and apartments vary according to the season, but never fall below the standard of Bahia.

Food prices. Bahia: fresh meat, 6d. a lb. without choice of joint; dried meat, 8d. a lb.; fish, 1s. 6d. a lb., though the waters of the coast teem with fine fish; cheese, 1s. 6d. to 2s. 6d. a lb.; oil, 2s. 6d. a lb.; butter, 3s. a lb.; sugar, 4d. a lb.; salt, fine, 6d. a lb.; common, 3d. a lb.; potatoes, 4d. a lb., and all other vegetables at famine prices; gas, petroleum, and similar commodities are also very dear.

The British Consul for Pernambuco, in his report for 1912, complains that prices are going up instead of down—

Recife: beef is 9d. a lb., but the joints contain a very large proportion of bone; mutton is a 1s. a lb.; potatoes, 6d. a lb.; ice, 2d. a lb.; and milk, 8d. a pint. Brazilian beer is 1s. 6d. a bottle, and imported British jams and preserved food at more than double British prices. Dried beef is a 1s. a lb., and butter 3s. a lb.

Maranhão: fresh meat, 8d. a lb.; dried meat, 1s. 3d. a lb.; bread, 6d. a lb.; milk, 6d. a pint. A family must spend a pound a month on gas, and 25s. a month on water. Game, prawns, and coarse fish are cheap and abundant.

Of the prices in the Amazonian States, it is only possible to give samples. Referring to the market at Manáos, M. Paul Walle writes—

“I have seen sold there chickens by no means plump for from 8s. to 10s. each, and fresh beef at 2s. a lb. Fish of 2 or 3 lbs. weight brought from 20s. to 25s. each, and fruit was 3s. a lb. The rent of a decent room, unfurnished, was from £7 to £8 a month.

In the Territory of Acre the price of commodities touches a higher figure still—

Bacon and lard are quoted at 3s. a lb. ; dried meat 1s. 6d. a lb. ; a chicken costs £1 ; butter, 15s. a lb. ; beer, 4s. a bottle ; rice and beans, 1s. a lb. ; sugar and salt, 6d. a lb. ; eggs, 1s. each.

EDUCATION.—Brazil places so high a value upon education, that no illiterate may exercise the franchise. Education is free and secular, and is provided by the States and municipalities in the primary and secondary stages. Facultative colleges are administered by the Federal Government as follows : Medicine and Engineering at Rio de Janeiro ; Law at São Paulo ; Mining at Ouro Preto ; Medicine at Bahia ; and Law at Recife. Affiliated to the Federal institutions are a number of other colleges, including a Faculty of Law and another of Applied and Social Science at Rio de Janeiro ; a Faculty of Law in Minas Geraes ; a School of Engineering at Recife ; a School of Medicine at Porto Alegre ; and Schools of Law and Engineering at Bahia.

The primary schools and number of scholars attending them in North Brazil are as follows—

State.	Schools.		Scholars.	Percentage of Revenue spent on Education.	
Alagoas	..	—	..	—	.. 12.
Amazonas	..	—	..	—	.. 12.25
Bahia ..	..	577	..	—	.. 8.3
Ceará ..	..	344	..	15,000	.. 14.3
Goyaz ..	..	—	..	—	.. 11.
Maranhao	..	230	..	—	.. 11.
Matto Grosso..	..	—	..	4,691	.. 6.7
Pará ..	..	—	..	18,000	.. 21.
Parahyba	..	84	..	4,668	.. 12.
Pernambuco	..	—	..	—	.. 4.5

Primary schools—*continued.*

State.	Schools.	Scholars.	Percentage of Revenue spent on Education.
Piahy ..	— ..	—	.. 10.3
Rio Grande do Norte ..	— ..	—	.. 13.75
Sergipe ..	— ..	—	.. 15.6

This list is incomplete in detail, the figures having evaded even the industrious compilers of the *Annuaire du Brazil Economique* for 1913, who promise fuller information in their next issue. The percentages of revenue spent by the States for which figures are not obtainable show that education is being assiduously fostered everywhere in Brazil.

REGULATIONS FOR IMPORTERS, WITH CONSULAR CHARGES.—With a few unimportant exceptions, all goods sent from abroad for consumption in Brazil, whether they arrive by land or sea, must have consular invoices sent with them. These invoices are made out in three copies : one to be sent to the Customs of the port of destination ; another to the commercial Statistical Department at Rio de Janeiro ; and the third copy to be kept in the Consular office. The first copy must be written in indelible ink, either by hand or machine ; the other copies may be written in any way so long as they are legible. The Consular fees are 6s. 9d., and the first copy of the invoice must bear stamps to that amount.

If there is no Consular Agent at the port of dispatch, the consignees of the goods must produce two copies of the commercial invoices at the Customs, at port of delivery, before the goods can be cleared, and at the same time pay the customary Consular fees.



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Belém do Pará. Offices of the Daily Newspaper, "A Provincia do Pará."

S. Brazil Railway Co.



The Consular invoices must contain the following information—

Number of the invoice (*this is inserted by the consular authority*) :

Declaration (*this must be signed by the shipper, his agent, or the exporter*) :

Name and nationality of the steamer :

Shipping port of the goods :

Port of destination of the goods :

Total value declared, including freight and approximate expenses incurred after the goods were bought :

Marks and numbers :

Quantity and description of the packages :

Specification of the goods :

Weight in kilogrammes :

The weight of the packages in one column, the weight of the goods in another, and the gross weight of goods and packages in the third :

The value of each article of the shipment in a column set apart for that purpose :

The name of the country where the goods were produced :

The quantity of goods in cases where duty is paid not by weight but by the number :

When goods from different countries have been included in one invoice, the shipper should intimate where each article was produced.

The invoices can be made out in the language of the country from which they are shipped, but the consignee must produce a translation of the specification before the goods will be cleared. If desired, the shipper can have the invoices made out in parallel lines : one in Portuguese and the other in the language of the country of export. Printed invoice forms are supplied free at the Consulates.

For differences between the Consular invoice and the actual goods when examined in the Customs at port of destination, the punishment of double duty may be

imposed. If, for instance, an attempt to evade part of the legitimate duty is disclosed by such examination, or if the weight of the goods exceeds the declared weight by more than 10 per cent.

TRADE MARKS.—The law of trade marks in Brazil is comprehensive and complete. A trade mark may be registered locally ; the trade marks of other countries in diplomatic relation with Brazil will be recognised after compliance with due forms, and international trade marks are safeguarded.

In Brazil the trade mark must be registered at the Chamber of Commerce, where the establishment of the owner of the article to be protected is situated. The mark must be deposited at the Chamber of Commerce at Rio de Janeiro, and the description published in the official Government organ of the district. The trade mark is registered for a period of fifteen years, and is renewable at the end of that period.

Trade marks registered in countries in diplomatic relationship with Brazil are protected in Brazil if a certificate of foreign registration is lodged with the Chamber of Commerce at Rio de Janeiro, and the mark and description are published in the *Diario Official* of that city.

International trade marks which have been registered at the International Bureau at Berne are also recognised in Brazil after the compliance with formalities already outlined.

In Brazil, infringement of a trade mark is a criminal offence, and the offender is liable to imprisonment for six months as well as a fine.

PATENTS.—Brazil grants patents for a term of fifteen years and provisional protection for the period of one year. Application for a patent must be made to the office of the Minister of Agriculture, and specifications and plans and drawings must be deposited in duplicate. The specifications must be written in Portuguese. The Brazilian system of weights, measures, etc., must be employed.

The cost of taking out a patent in Brazil from this country is approximately £35; and, in addition, the following annual tax must be paid: First year, 26s. 8d.; second year, 40s.; and 13s. 4d. for each additional year for the period covered by the patent. A patent lapses when the patentee has made no effective use of the invention for three years.

TRAVELLERS' SAMPLES.—Samples of little or no value are admitted free of duty on a proper petition being made by the party concerned, and after due examination and verification by an employee appointed by the Inspectorate. Samples of no value are defined as fragments of part of any merchandise in such quantity only as is absolutely necessary to afford a proper appreciation of its nature, species, or quality, and the duties on which would not exceed 1s. 4d. a package. Complete objects, but such as are already rendered unfit and useless for the purpose for which they are intended, are also considered as of no value; no merchandise may, however, at the time of its examination or verification be rendered useless with the object of freeing it from the import taxes.

In the case of samples of value, the traveller either must pay the taxes or must guarantee the taxes by

signing a bond of responsibility with a proper surety (a bank or registered merchant) binding himself to re-export the goods within the period allowed by the inspector. This period may be prolonged. The bond of responsibility within the period of one year (maximum) is only annulled by production of documentary evidence of the destination of the goods.

The following will be considered proper legal documents :

(1) From ports where there is a Custom-house ; a certificate *verbo ad verbum* of the clearance of the goods through the Customs.

(2) From ports where there are no Custom-houses ; an attestation from the local authorities, from persons to whom the goods were consigned, or to whom they were delivered, either as consignee, depository, or buyer.

(3) Proof of the shipwreck, stranding or capture of the ship, with documents which in law will be recognised as *bonâ fide*, will in all cases have the same effect as the certificate of Customs Clearance dealt with in Section 1.

The documents mentioned in (2) and (3) must be legalised by Brazilian Consular officers.

Articles belonging to operatic or dramatic companies, circus and other travelling companies giving public performances, scientific collections of natural history, numismatics and antiquities, statues and busts of any description for purposes of exhibition or public display, foreign goods intended to be placed in the industrial exhibitions which may be held in the country, are all exempt from Customs duty.

CHAPTER IX

PORTS AND HARBOURS

It is a matter of common knowledge that Brazil possesses in Rio de Janeiro one of the three best natural harbours in the world. The country has others little inferior, but until quite recently the harbours of Brazil had to rely upon their natural advantages. The first Brazilian harbour to be equipped for the adequate and convenient loading and unloading of great ships was Santos, the port of the State of São Paulo. The equipment of this port was made necessary by the enormous export trade in coffee, and by the waste of time caused by bad equipment. When the first harbour works were completed and thrown open for the use of shipping, a momentous discovery was made by the authorities, viz., that in a properly constituted port, with handy Customs House and stores for merchandise, the duties paid increased out of all proportion to the trade.

Within a year of the opening of the new port works at Santos, the duty paid doubled itself, and the increase was marked also in the next two years. The old system, or want of system, had helped those who wished to avoid paying duty. Brazil draws its main revenue from import and export duties, and the authorities were not slow to take the lesson. Before many years had elapsed, Parliament had made provision for the amelioration of all the ports and harbours of Brazil. To provide means, it was arranged that a tax of 2 per cent. *ad valorem*, payable in gold, should be levied on the trade of each port.

With such a guarantee, it was not difficult to find capital for the construction of port works at all the principal trade outlets of the country. Port concessions were granted to companies which constructed or are constructing harbour works at the following main ports: Manáos (Amazonas), Belém (Pará), Bahia (Bahia), Victoria (Espírito Santo), Rio Grande (Rio Grande do Sul).

The great ports of Rio de Janeiro and Recife (Pernambuco) the Federal Government has kept in its own hands; and has also undertaken the harbour improvements at several other minor ports, such as Natal, Cabadello, Florianopolis, and others, where the necessary works are only now being planned.

In the following account of the works in progress, and the trade and shipping of North Brazilian ports, the ports are arranged in their geographical order from West to East, and then from North to South.

Manáos, the capital and chief river port of the State of Amazonas, has been equipped with special harbour works made necessary by the great difference between the high and low water-level of the river Negro, on the bank of which the city is built. For six months of the year, during the rainy season (December to May), the river is high, and ships of any draught can berth alongside the quay. When the dry season comes, there is a difference of from 40 to 50 ft., and a mud-bank (100 yd. wide) intervenes between the water and the quay. To meet the exigencies of this situation, a great floating wharf and dock have been constructed, and at another point a quay that is submerged at flood time. These



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Belém do Pará. Quay and Shipping

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works, with storehouses, Custom-house, etc., have been constructed by the Manáos Harbour Co.

The shipping of the port is 1,400 vessels a year ; total tonnage, 750,000. The value of the trade is : Imports, £1,650,000 ; exports, £7,725,000.

The second river port of the State of Amazonas is *Itacoatiara*, where 140 vessels, of a total tonnage of 125,000, enter and clear each year. The trade of the port is valued at : Imports, £125,000 ; exports, £75,000.

Belém, the capital of Pará, is situated at the junction of the rivers Moju, Acara, and Guama, a widening of the Amazon known as the Bay of Guajara. The harbour works were begun in 1906, and have cost £8,600,000. They consisted of dredging the river, which was only 13 ft. deep in shore, to double that depth ; constructing a fine quay a mile long, with docks, a series of eleven great storage depôts, a Custom-house, etc. The shipping of the port is represented by 1,000 steamers entered and cleared each year, with a tonnage of 1,500,000. The value of the trade of the port is, annually : Imports, £3,125,000 ; exports, £6,000,000.

Obidos, the second port of Pará, has shipping of 300 vessels a year, of 220,000 total tonnage ; and the export trade of this river port is worth £75,000.

São Luiz, the capital and chief port of the State of Maranhão, has been the subject of much anxious enquiry by a commission. The port is formed by the confluence of two rivers : the Anil and the Bacanga ; and this stream forms a channel about a mile and a half long and half a mile wide. This channel, once deep, has recently been silting up, and there is difference of opinion whether

the silting is caused by the two rivers, or by the action of the waves. The Commission appointed to devise means for the amelioration of the port has opened an enquiry into the causes of the silting of the channel, and decided to experiment with dredgers in order to see whether the sand can be combatted. The shipping of the port is represented by 250 ships entered and cleared each year, representing a tonnage of 400,000. The annual value of the trade of the port is : Imports, £625,000 ; exports, £113,000.

Maranhão has another port beside São Luiz, viz., *Tutoya*, situated on the most westerly of the six mouths of the river Parnahyba. This is an excellent port, and much of the trade of the State of Piauhy is passed through Tutoya. The port is visited by 225 vessels, of a total tonnage of 220,000 each year ; and has an export trade worth £380,000.

Fortaleza, the capital and principal port of Ceará, is one of the worst ports on the North of Brazil. It has been the scene of several experiments for amelioration, but the sand from the dunes which surround it has continually drifted into the channel and tended to choke it. The experiment of planting the dunes with vegetation with binding roots has been tried with success, and dredging is now more effective than formerly. Three powerful dredgers are maintained by the Government for the work in Fortaleza and the two other ports of Ceará, Camocim, and Aracaty. The shipping of the port averages 500 ships entered and cleared annually, the tonnage being 590,000. The value of the annual trade is : Imports, £867,000 ; exports, £750,000.



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Belém do Pará. Cranes on Quay

S. Brazil Railway Co.

Aracaty is a river port on the Jaguaribe (10 miles from the mouth), where vessels of 12 ft. draught can anchor in the rainy season. The shipping is annually 132 vessels, of a tonnage of 40,000. The value of the trade is : Imports, £27,000 ; exports, £43,000.

Camocim is another port for coasting vessels at the mouth of the river of the same name. The shipping is 175 vessels a year, of a tonnage of 84,000. The trade is valued at : Imports, £10,000 ; exports, £18,000.

Natal, the capital of the State of Rio Grande do Norte, is an excellent natural port, the entrance to which has been obstructed by a reef of rock on which the sand accumulates. To remove this reef and to take away the accumulated sand from the river Potenghy, and the sea sand as well, is the work of the port improvement commission. The rocks are being shifted by a Lobnitz machine, and four dredgers are at work on the sand accumulation. When the work is completed, there will be a clear channel, with 16 ft. of water at low tide and 22 ft. at high tide. The shipping of Natal is 240 vessels annually, of a total tonnage of 300,000. The value of the yearly trade is : Imports, £175,000 ; exports, £260,000.

Cabadello, the port of the State of Parahyba, is situated at the mouth of the river Parahyba. It is not far from the State capital, which is 10 miles up the river. Cabadello is furnished with a wooden quay, built on a rock foundation. The length of the quay is 180 yd., and it is now proposed to extend it in stone to a total length of 660 yd. The plan is further to extend it by a break-water a mile long, and to dredge the basin to a depth of 26 ft. The quay is to be provided with railway lines,

electric cranes, stores, and other equipments. Cabadello has a yearly trade of: Imports, £373,000; exports, £252,000. The shipping amounts to 374 vessels annually, of a total tonnage of 390,000.

Recife, the capital of Pernambuco, is a port formed by a reef of rock parallel to the coast, and affording a harbour, which is now being improved into a fine port. The cost of the works, which are making good progress, will be £5,600,000; and the result promises to be one of the finest ports in South America. They consist of:—A breakwater, three-quarters of a mile in length, extending out to a depth of 30 ft. at low water; a stone jetty converging toward the breakwater, and having a length of half a mile; quays for loading and unloading vessels, one with 33 ft. of water and 600 yd. long, another with 30 ft. of water and 65 yd. long, and a third with 26 ft. of water and a length of over three-quarters of a mile; the strengthening of the old seawall and the construction of a new one; the dredging of the port; the construction of seven big storehouses, and the equipment of the quays with electric cranes, railway lines—communicating with the station—etc. The shipping of the port is represented by 900 steamers entered and cleared annually, with a tonnage of 1,750,000. The trade is valued at: Imports, £3,500,000; exports, £1,275,000.

Jaragua is a suburb, and the port of Maceio, the capital of the State of Alagôas. The port is protected by a reef, and upon this reef, which is flush with the water, a jetty is now being built. It will be 100 yd. long, with two wings: one 110 yd. long and able to accommodate vessels of 30 ft. draught, the other 240 yd. long and



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Pernambuco. Ponte de Recife

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with 26 ft. of water. A breakwater a quarter of a mile long, is included in the port scheme, with dredgers, stores, railway lines, electric cranes, and other necessities for a port. The shipping of the port is represented by 600 vessels, of a total tonnage of 600,000. The trade is valued at : Imports, £490,000 ; exports, £240,000.

Aracajú, the capital of Sergipe, is a port difficult of access. Built at the mouth of the river Cotinguiba, the entrance to the port is obstructed not only by the river sand-bar, but by a great submerged rock. A narrow and winding channel, about 10 ft. deep, forms the entrance. A long time ago a concession was given to a company to improve the port entrance and the port itself, and a guarantee of 6 per cent. interest was attached to the concession. But the undertaking was not carried out, the concession was cancelled, and nothing has since been done. The matter is now being considered by a commission. The shipping of Aracajú is 200 vessels, of 95,000 tons in all ; and the value of the yearly trade is : Imports, £150,000 ; exports, £30,000.

Bahia, the capital of the State of the same name, is situated on the beautiful Bay of Todos os Santos, a fine sheet of sheltered water, 25 miles long and 20 miles broad, with an entrance 3 miles wide. There is 40 ft. of water close in shore, and the anchorage is grandly sheltered. This fine natural harbour is only now being equipped with the buildings and quays necessary for its progress. The cost of the harbour works, when finished, will be £2,600,000. They include the construction of three breakwaters and two quay walls, the levelling of a large wharf space and the erection of storehouses, the laying

down of railway lines and the installation of electric cranes, and the construction of a floating dock and a lighthouse. Over 1,000 large steamers, representing 2,300,000 tons, put in and out of Bahia every year ; and the trade of the port is : Imports, £2,600,000 ; exports, £4,125,000.

Amarração, the port of the State of Piauhý, is situated at the most easterly of the six mouths of the river Parnahyba. For the improvement of the port, a commission has been appointed. Up to the present, the work done has consisted in taking soundings and plans of the harbour, and gathering information about the currents.

Corumbá, the river port of the State of Matto Grosso, is distant 1,816 miles from the port of Monte Video (Uruguay), by the river Paraguay. The journey is made by the boats of the Lloyd Brasileiro Co. At Corumbá, the river is 350 yd. wide, and at the quays there is 6 ft. of water at low water. A plan was elaborated for deepening the port, so as to accommodate vessels drawing 20 ft. of water, but was abandoned on account of the expense. The shipping of the port is represented by 120 steamers annually, of a total tonnage of 34,000. The value of the trade is : Imports, £439,000 ; exports, £391,000.



CHAPTER X

INLAND COMMUNICATIONS

RAILWAYS.—At the end of the year 1911 there were 13,929 miles of railway open for traffic in Brazil. These lines were classified as follows—

Class.	Mileage.
Administered by the Union, <i>i.e.</i> , the Federal Government	2,090
Controlled by the Union and leased ..	4,664
Concessions with interest guaranteed	1,967
Concessions without interest ..	1,208
State lines and State concessions ..	4,000
Total	13,929

There were, in addition, 2,400 miles of line in construction, and 3,170 miles more—the construction of which has been approved. During the year 1911, 572 miles were thrown open to traffic; and in 1912, 700 miles more were opened, bringing the total mileage of Brazil up to 14,629. When it is considered that the total mileage of Brazilian railways in 1900 was 9,572 miles, it will be seen that the lines have been increased by more than 50 per cent. in twelve years—a remarkable expansion.

Of these railway lines, Northern and Central Brazil only possesses a small and utterly disproportionate share. In the volume on *South Brazil*, it is shown that the greater part of that area is served by a network of railway lines, which link up the capitals of each State with Rio de Janeiro, the Federal capital; and serve to carry the

products of the agricultural and pastoral areas of the hinterland to the ports upon the coast. North and Central Brazil enjoy no such advantages of transport, but—at best—a few disconnected lines running from inland centres of population to ports upon the coast. The following list will show that at present there are some of the Northern States that remain without any railway facilities at all.

State.						Miles of Railway.
Alagoas	..	..	..	..	..	187
Amazonas	..	..	..	..	..	227
Bahia	..	..	..	..	..	947
Ceará	..	..	..	..	..	550
Goyaz	..	..	..	..	..	—
Maranhão	..	..	..	..	..	49
Matto Grosso	..	..	..	..	..	—
Pará	..	..	..	..	..	240
Parahyba	..	..	..	..	..	150
Pernambuco	..	..	..	..	..	562
Piauhv	..	..	..	..	..	—
Rio Grande do Norte	..	..	..	..	..	198
Sergipe	..	..	..	..	..	—
Total						3,110

The lines of railway connection all end on the borders of South Brazil. Bahia, the most southerly State of the North, has no connection with Espírito Santo, its neighbour to the South, nor with Sergipe, on its northern boundary. The thousand or so miles of Bahian railway are a series of disconnected lines, running from inland centres to points on the coast.

The only railway centre in North Brazil is Recife, whence a line runs north as far as Natal, the capital of Rio Grande do Norte, passing through the State of

Parahyba from south to north. Lines also run south through Pernambuco into the State of Alagoas. But at Natal, in the north, all intercommunication ceases. The only railway lines on the north coast of Brazil are connecting links between inland centres and seaports.

Recognising the importance, strategical as well as commercial, of linking up all the States of the Union by rail, the Government has prepared a scheme of railway expansion that is magnificent in its comprehensiveness. A line is to be built linking Espirito Santo with the system of Bahia, and going north through Bahia, Sergipe, and Alagoas to Recife, utilising the disunited lines that already exist in the unabridged district. There will then be complete communication along the east coast, from north to south.

To link east with north, the line from Recife to Pesqueira is to be extended, passing through the south-west corner of Parahyba. Here it will join with an extension of the Baturité railway of Ceará, and so link Recife with Fortaleza, the capital and port of Ceará. The other railway of Ceará, the Sobral line, is being extended west through the State of Piauhhy to the city of Therezina. A branch will link Therezina with Amarração, the port of the State ; while the main line is being pushed further west to Caxias, in the heart of Maranhão. As Caxias is being joined by rail with São Luiz, the port and capital of the State, the scheme provides for a railway chain around the edge of the republic. Provision is also being made for pushing railways into the heart of Central Brazil. To Goyaz, capital of the State of that name, a line is now being built

from the boundary of São Paulo, passing through the south-western triangle of Minas Geraes. When the Goyaz railway is complete, a rich and fertile district will be placed in railway communication with Santos, the flourishing port of the State of São Paulo.

In the same way, the North-Western Co. is building a line from the far boundary of São Paulo to the city of Corumbá, the river port of the State of Matto Grosso. Already the rails are laid on the greater part of this North-Western Railway ; and in a very short time Corumba, the chief trading centre of the State, will be brought within three days' journey of Rio de Janeiro, the Federal capital. The isolation of this State can be estimated when it is stated that, up to the present the only way of reaching Corumbá has been by boat to Monte Video, and thence by river boat to Corumbá, a journey of about thirty-five days.

So far, this chapter has only been concerned with railways that are actually in construction, or that have been approved, surveyed, and planned. In connection with the scheme to protect the rubber industry of the Amazonian valley, even more ambitious railway schemes have been formed for the centre of Brazil. When carried out, the North-Western Railway will be extended through the heart of Matto Grosso to link up with the Madeira-Mamore railway, which bridges an unnavigable stretch of the river Madeira, from Villa Bella to Santo Antonio, and allows the rubber of Bolivia to pass through the ports of Amazonas. Another extension will be built west to Bolivia, there to link with the Antofogasta line to the western coast. Already the Brazilians talk of the

trans-Continental railway of Brazil. Another projected railway is the extension of the line at present connecting Rio de Janeiro with Pirapora in Minas Geraes. It is proposed to extend this line through the heart of Goyaz as far as Belém do Pará.

These are schemes for the future. The present shows that steady progress is being made with the linking lines of the north, which cannot fail to benefit immensely from the rapid transport and the intercommunication of which it has, up to the present, been deprived.

In order to understand how these lines are being built, it will be convenient to refer to the classification of existing lines which heads this chapter. It will be seen that some of the lines are administered by the Union, or Federal Government; others are owned by that power and leased; others have been constructed by corporations with guarantee of interest on the capital invested; others have been constructed by corporations without any such guarantee, but in return for land grants or some similar inducement; while a fifth class has been built by the Government of some one of the States.

It is now a well-defined principle of finance in Brazil that the most effective means of building railways is for the Federal Government to undertake the task. Indeed, it was found at one period in the history of the Republic an economical and practical step to re-purchase most of the lines which had passed into private hands, and so to extinguish the guarantees of interest, which had become at once harassing and unbusinesslike. The sum of £16,000,000 was so expended, and the re-purchased lines

were leased to corporations under agreements which were mutually beneficial.

An example of these leases is provided in North Brazil by the terms of the lease of the network of Bahia to the "Compagnie Viação Geral de Bahia," which pays to the Government—

- (1) $5\frac{1}{2}$ per cent. of the gross receipts up to £320 a mile ;
- (2) 15 per cent. of the gross receipts between £320 and £430 a mile ;
- (3) 30 per cent. of the gross receipts between £430 and £640 a mile ;
- (4) 40 per cent. of the gross receipts between £640 and £1,060 a mile ;
- (5) 50 per cent. of gross receipts exceeding £1,060 a mile.

The following sums have been received by the Federal Government in payment for the leases of railway lines in North Brazil, since the leasing system was instituted, and up to 31st December, 1911—

Line.	Pounds Sterling.
Sobral	36,800
Baturité	144,360
São Francisco	83,160
Bahia to São Francisco	49,760
Central Pernambuco	169,720
Central Alagoas	44,120
Conde d'Eu	43,240
Natal to Independencia	1,080
Recife to São Francisco	6,120
South Pernambuco	1,800
Paulo Affonso	120
Central of Bahia	60,280
Total	<u>£640,560</u>

As far as possible, the Federal Government is pursuing its policy of railway expansion on the system of constructing and then leasing lines ; but where the financial position does not permit this to be done, concessions are still granted to corporations.

The result of working the more important lines in North Brazil during 1911 was as follows—

Controlled by the Great Western Co.	Sobral : <i>profit</i> £5,685 ;
	Baturité : <i>profit</i> £19,164 ;
	Natal to Independencia : <i>profit</i> £2,391 ;
	Conde d'Eu : <i>profit</i> £15,160 ;
	Recife to Limoeiro and Timbauba : <i>profit</i> £57,130 ;
	Central of Pernambuco : <i>profit</i> , £35,375 ;
	Recife to São Francisco : <i>profit</i> £59,952 ;
	South Pernambuco : <i>deficit</i> £3,550 ;
	Central of Alagôas : <i>profit</i> £13,010 ;
	Ribeirão to Cortez : <i>deficit</i> £2,132 ;
	Paulo Affonso : <i>deficit</i> £4,205 ;
	Network of Bahia : <i>deficit</i> £14,757.

COMMUNICATION BY RIVER.—North and Central Brazil have the advantage of the longest stretches of navigable waterway in the world. There are, in all, some 26,000 miles of navigable rivers, and advantage is now being taken of at least one-half of this extent. Encouraged by subsidies granted by the Federal Government, a considerable number of companies have been formed for promoting the navigation of the fine rivers of the country.

The most important of these is the Amazon Steam Navigation Co., which has its headquarters at Belém, and controls a fleet of some forty river steamers, representing a total tonnage of 20,000. These boats provide regular services on the Amazon and all its most important tributaries, covering over a quarter million miles every year.

The following are the most important of the regular services maintained by the company—

- (1) Belém to Manaos.
- (2) Belém to Iquitos, in Peru, a distance of 2,651 miles.
- (3) Belém to Bayao, on the river Tocantins.
- (4) Belém to Mazagão.
- (5) Belém to Ayatanaham, on the river Purus.
- (6) Belém to Santo Antonio, on the river Madeira, and the Brazilian terminus of the Madeira-Mamore railway. The total distance between the two terminal ports is 1,719 miles.
- (7) Manáos to Santa Isabel, on the Rio Negro.

There are also services on the Araguay, the Itaituba the Santa Julia, the Soure, and the Mosqueiro.

There is another subsidised company, with headquarters at Belém, which has a contract to run regular services on the Upper and Lower Tocantins, and the Araguaya. This company possesses ten steamers, and receives a subvention of £2,000 annually from the Government. For this sum, twelve trips are made annually on each of the lines.

Belém is, further, the headquarters of a number of private firms, which run steamer services on the Amazon and its many tributaries. Among them are Mello & Co., with eleven steamers running to the Territory of Acre ; the Barbosa and Tocantins Co., with seven steamers trading to the Territory of Acre ; and Roche Silva & Co., and Braga-Sobrinho, both trading with Acre Territory. In all, 120 river steamers ply on the Amazon and its tributaries.

The rivers served by these various concerns, and others

at Belém, are : The *Acre*, the *Pauhini*, the *Ituxi*, the *Xapuri*, the *Antimary*, the *Jurua*, the *Javary*, the *Madeira*, the *Tapajoz*, the *Xingu*, the *Trombetas*, the *Yamundu*, and the *Rio Branco*. Thus it will be seen that good use is being made of the great waterway of the Amazonian system.

In the State of Maranhão, the National Packet Co. has taken over the navigation of the *Itapicuru* and other rivers. Ten small steamers and a number of barges are used.

In Piahy, the *Upper Parnahyba* has a regular monthly service of boats between Floriano and Santa Philomena, under a Government contract dating from 1909.

The *Lower Parnahyba* is navigated by the boats of the River Parnahyba Navigation Co.—five in number. The company has a Government contract dated 1907, and an annual subvention of £8,000. The boats run regularly during the rainy season ; but in the dry season no regularity can be maintained, owing to the sandbanks and shallows of the river. The Government is now dredging the river to remove the worst of the obstacles and render it navigable at all times of the year.

The *Lower São Francisco* is navigated by the boats of the Pernambuco Company of Navigation, which are three in number. The services are regular, and under a contract of 1906 the company receives an annual subvention of £4,000.

The navigation of the *Upper São Francisco* is in the hands of the State of Bahia, which runs twelve steamers there. A great effort is made to preserve a regular service, but the section on the upper reaches (which

terminates at Pirapora) is apt to suffer in a very dry year. The contract provides for two voyages a month from Joazeiro to Pirapora ; and there are, besides, trips and services on some of the larger tributaries of the river. The annual subvention is £10,000.

Sergipe has a small company called the River Steam Navigation Co., with headquarters at Aracajú, the little steamers of which navigate the lower reaches of the rivers Cotinguiba, Real, and Vasa-Barris.

In Bahia there are a number of small steamers plying on the rivers which run into the Bay of Todos os Santos. They are the property of the Navigation Bahiana.

Communication with the State of Matto Grosso is maintained by a river service administered by the Lloyd Brasileiro Co., on the river *Paraguay*, from Monte Video (Uruguay) to the ports of Corumbá, on the Paraguay, and Cuyabá, the State capital, on the river of the same name. The first stage of this journey, from Monte Video to Corumbá, is accomplished on steamers of 800 tons burden, and accommodating fifty first-class and 100 third-class passengers. During this journey of 1,816 miles, the ports at which calls are made are : Rosario, Parana, La Paz, Corrientes (Argentina) ; Asuncion (Paraguay) ; and, in Brazil, Apa, Porto Murtinho, Coimbra, and Corumbá. At Corumbá, passengers for the capital city have to take smaller boats of 50 tons, in which the journey of 275 miles is made to Cuyabá, by the river Paraguay and the river Cuyabá. These boats carry twenty first-class passengers and fifty third class. The same journey is also made by vessels belonging to companies of the Argentine Republic.

A great network of navigable rivers and streams exists in Central Brazil, and by the construction of a canal a few miles in length it would be possible to travel by water from the mouth of the river Plate to the mouth of the Amazon. Various attempts have been made to utilise the rivers of Goyaz, so as to shorten the tedious journey from that inland centre to the seaboard. One such was made on the river Araguaya, where the town of Leopoldina was founded as a headquarter of trading enterprise. A small fleet of steamers was built to navigate the river from Leopoldina to Santa Maria, a distance of 750 miles out of the 1,250 which separate that port from the mouth of the Amazon. While this service was maintained, it shortened very appreciably the journey to the coast, which occupies seven months there and back by canoe. Unfortunately it was not possible to maintain the steamer service, and the only connection Leopoldina now has with the coast is the tedious canoe journey, rapid enough on the way down to the coast with the stream, but a work of time and great labour when returning against the stream.

Such is travel in Central Brazil, where the only roads are bush tracks, hardly distinguishable, and where the greater part of the country is still entirely unexplored. One of the most remarkable exploits in Brazilian exploration was that which surveyed the telegraph line now being built from Cuyabá to Santo Antonio, one of the terminal points of the Madeira-Mamore railway. This expedition passed through country where the foot of a white man had never before trodden, and a path had to be cut through the dense undergrowth for the motor-car

which carried the stores of the party. Among other discoveries, was a chain of mountains that had previously escaped the knowledge of the map-makers.

ROADS.—It goes without saying that roads are few and bad in North Brazil. In the Amazonian valley no attempt has ever been made at road-making ; for the river courses have been the traditional highway of mankind, and the forest has remained almost untouched until the rubber-seekers came to disturb it. The *sertão* is also trackless, and the coastal regions of the north boast but short and primitive roads. Up to the present, men have travelled by sea and by river, or through the trackless bush of the *sertão*.

In the large cities the contrast is marked. The Brazilian is keenly appreciative of all cheap modes of conveyance, and tramway cars are the most popular of all. Bahia, Recife, Belém, and Manáos have all their systems of electric cars, managed with a care for the public convenience and comfort that would put to shame many cities of the Old World that pride themselves upon their sophistication. In all the other capital cities of North Brazil there are tramway cars of some sort, though, as in Parahyba, Aracajú, and similar cities, animal traction is all that can be managed. Mules, horses, and even oxen are pressed into the service, and very quaint effects are sometimes produced by the harnessing of an ox and a mule to a tramcar in the principal street of one of these minor capitals.

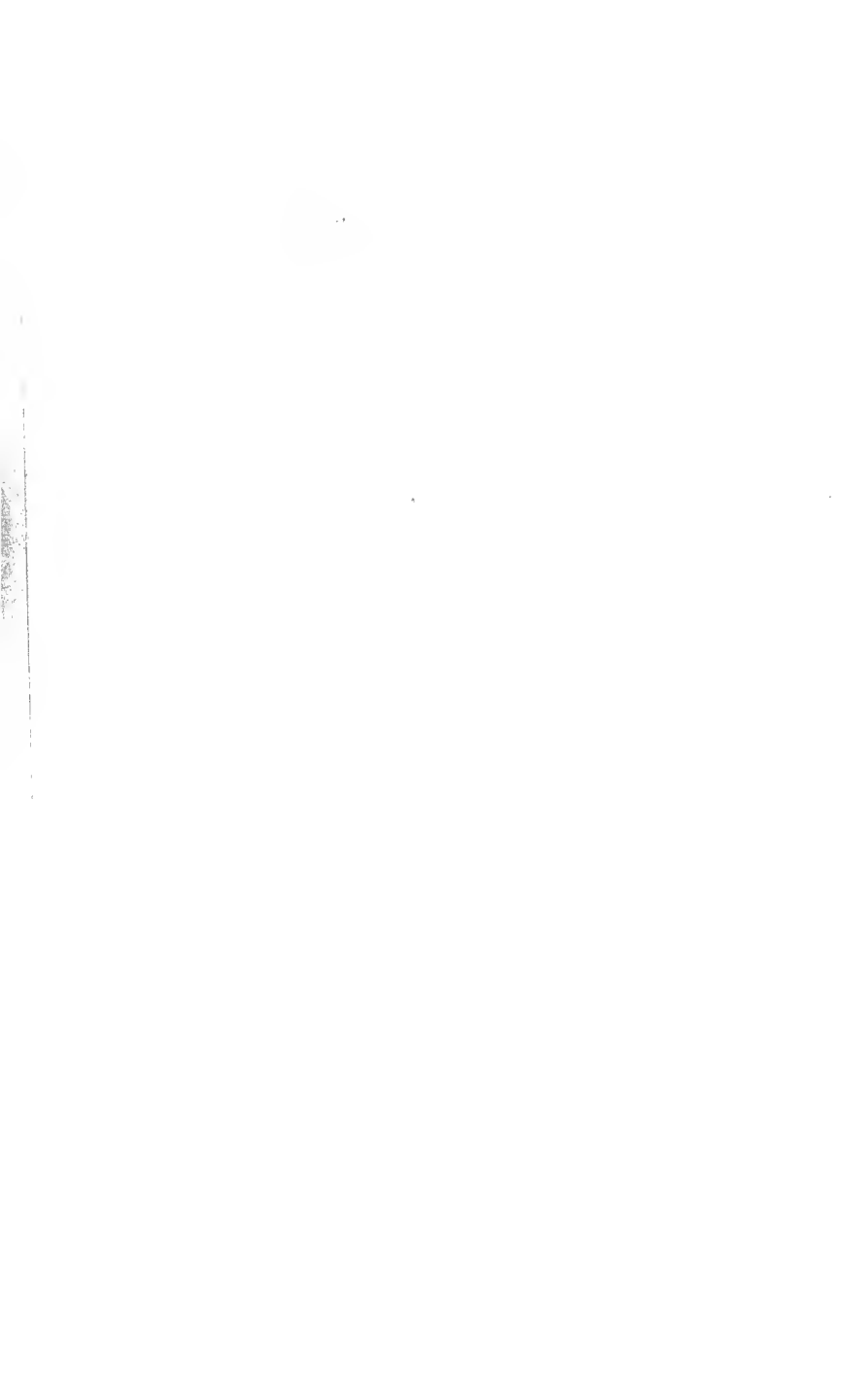
The tramcars of Manáos and Belém are said to be the best in the world ; they are certainly very fine. One may ride in an open car, or in a closed one ; a *car de luxe*



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Maceió. A Method of Transport

the R. M. S.P. Co.



may be hired by a party of friends for one of the longer journeys ; and in Manáos there are even funeral cars, one line of tramway serving the cemetery.

In addition to being very convenient and serviceable, the tramway services of these cities are cheap, according to Brazilian scales of expenditure ; yet they represent a very remunerative enterprise.

CHAPTER XI

THE RUBBER INDUSTRY

FOR some years, the annual production of rubber by Brazil has been in the neighbourhood of 40,000 tons; but the value of the export has varied enormously, according to the market price of rubber. The following table shows the amount exported each year from 1906 onwards, with its value. The significance of the great drop in value for 1913 lies in the fact that in that year the amount of plantation rubber put on the market exceeded the total of wild rubber for the first time in the history of the rubber trade. To this fact is due the great fall in price, a fall which is held will have a permanent effect on the Brazilian rubber industry. The figures are—

Year.		Tons of Rubber.		Value in pounds sterling.
1906	..	34,960	..	14,055,920
1907	..	36,490	..	14,490,208
1908	..	38,206	..	11,684,636
1909	..	39,027	..	18,926,060
1910	..	38,547	..	24,645,884
1911	..	36,547	..	16,095,024
1912	..	42,286	..	15,396,928
¹ 1913	..	32,978	..	9,545,060

The most significant deduction to be drawn from the table is that supplied by the great fall in value, although the quantity produced has been maintained with some regularity until the year 1913. A comparison between

¹ The figures for 1913 are for the first eleven months only, and the last month will probably be above the average in quantity and value.

the world's total production of rubber in the years 1912 and 1913 will throw a good deal of light upon this fall in price. The figures are supplied by the accepted authority upon rubber production, and are as follows—

	1912. Tons.	1913. Tons.	Difference. Tons.
Plantation ..	28,500	47,000	+ 18,500
Brazil	40,500	39,000	- 1,500
West Africa ..	13,800	10,000	- 3,800
East Africa ..	4,000	3,000	- 1,000
Central America	2,500	2,000	- 500
Guayule ..	7,000	2,000	- 5,000
Jelutong ..	2,700	2,000	- 700

The plantation rubber displaced 12,500 tons of wild rubber in the market, as well as monopolising the whole of the increased demand for the commodity. Although the Brazilian output only fell 1,500 tons in quantity, the effect of the lowered price must be very considerable upon the output for the succeeding year.

This brief recapitulation of the rubber situation at the end of 1913 is necessary before entering upon a review of the industry in Brazil, and the steps which are being taken to ensure its future development.

The circumstances which have already affected the Brazilian rubber industry unfavourably are manifold. Foremost among them is the distance of the rubber forests from the ports of export. This entails heavy expense for carriage, and is also partly responsible for the high prices of all commodities in the Amazonian States, but the demoralisation of all other industries by the profits made in trading in rubber has more to do with the dearness of life in Amazonia. For many years now, little or no attempt has been made to grow the

food-stuffs required for the locality, although the soil is fertile and cultivation easy. The whole energy of the population has been given to rubber gathering and rubber trading, and it is consequently necessary to import the food for local consumption from long distances at a ruinous cost. This cost is enhanced to the gatherers of rubber by the system on which the bands of rubber gatherers are organised.

It may briefly be defined as a credit system, which involves a high rate of interest to all concerned. The unhealthiness of the best rubber country, and the great loss of life involved by living in the swamps where the *heveas* flourish, is another drawback accentuated by the irregular life the rubber collectors lead and the poor food they consume. Such a combination of circumstances have given rise to the axiom of the rubber world, that when the increase of plantation rubber production has brought the price of rubber down to 2s. 6d. a lb., the Brazilian rubber must be driven off the market, since it will be impossible to produce it so cheaply.

On the other hand, it must be remembered that Brazil is the natural home of the *hevea* and other rubber-producing trees and plants, from which the Brazilian rubber is derived ; and that there is no diminution of the supplies, except in the case of caucho rubber, the collection of which involves the destruction of the trees. Indeed, there are vast tracts of rubber trees as yet untouched, owing to their existence in areas at present inaccessible, but soon to be made easy for exploitation. It has further to be considered that all the efforts of the rubber planters have as yet failed to effect the production of an article



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Tapping Rubber Tree

comparable in quality to the best product of the Brazilian forests.

It is, therefore, argued by the upholders of the industry in Brazil that timely reforms in the methods practised in the forests of Brazil, provision of adequate transport facilities, the cheapening of the price of commodities by stimulating local agricultural activity, the replanting and fresh planting of rubber trees in favourable localities, and other means of protection will enable the Brazilian rubber producer to hold his own with the planters of the East.

These arguments have so far commended themselves to the Federal Government, that a law for the protection of the rubber industry was passed in the early part of the year 1912. Before outlining its provisions, it will be convenient to give some account of the forest sources from which the Brazilian rubber supplies are derived and the methods employed in collecting these supplies.

The trees which furnish rubber are (1) the *Hevea Brasiliensis*, or *Syphonia elastica*, from which the best quality of rubber is derived ; (2) the *Castilloa elastica*, from which is derived the quality of rubber known as Caucho or slabb ; (3) the *Maniçoba*, or *Manihot glazowii*, which produces a rubber of excellent quality, though not so good as that of the *hevea*. The *Maniçoba* is not confined to the Amazonian valley, but grows in almost any part of tropical Brazil ; (4) the *Mangabeira* or *Hancornia speciosa*, which, like the *Maniçoba*, grows in regions beyond the Amazonian limits. Its produce is inferior to that of the *Maniçoba* in quality and quantity, but still it is a valuable rubber-yielding tree.

The *hevea* flourishes best on low-lying ground that is annually submerged during the rainy season of the year, and it is such districts which furnish the supplies of that rubber of the highest quality known to commerce as the best Pará. The *hevea* is locally called the *seringa*; a district containing a large number of *heveas* is called a *seringal* (Plural *seringaes*); the rubber gatherers are *seringueiros*, and the proprietor or lessee of a "seringal" is known as the *patron seringueiro*.

The patron himself is usually financed by the large rubber houses of Belém or Manáos, and, in his turn, finances each of his "seringueiros," of whom he may control 200 or 300. He supplies them, at exorbitant prices, with all the stores they require for their stay in the rubber forest, which extends usually from May to October. Thus each "seringueiro" starts the season heavily in debt to his patron, and, it often happens, returns from the forest without having extinguished that debt.

Each *seringueiro*, usually accompanied by his family, proceeds to a spot in the forest where he intends to begin operations, and establish an "estrada," or round of rubber trees. Enough has already been written of the Amazonian forests to acquaint the reader with their main characteristic, which is the enormous number of species they contain. So scattered are the *heveas*, that a round or "estrada" will comprise from 100 to 200 trees, the latter being a maximum quantity and only possible in very rich rubber country. It is only in such country that the *seringueiro* can organise two *estradas* of such size that both can be covered in one day. The average



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Rubber. Collecting the Latex

day's work of the *seringueiro* is to attend to an *estrada* of 150 trees, and this involves a walk of many miles.

Each tree is cut in numerous places with the little hatchet which is one of the *seringueiro's* tools, and a little tin cup is bound to the trunk where the incisions unite. Into these little cups the *latex* drips, and is collected daily.

The method of coagulation in the Amazonian valley is peculiar to the district, and experts assert that to this method is due the high quality of the rubber commercially known as best Pará. The coagulation is effected in a little hut, known as the "fumador," where is lighted a fire of the nuts of the Urucury palm, mixed with resinous wood. This mixture gives forth a heavy acrid smoke, which causes the coagulation of the *latex*. Seated in this little smoky hut, the *seringueiro* dips a wooden spoon or paddle into the *latex*, some of which adheres to the wood. This is held in the smoke until it coagulates. He then dips the spoon in the *latex* again, repeating the process until a ball of rubber, weighing from 5 to 50 lb., has been formed on the spoon; and in this shape the rubber is received from the forests at the warehouses of Manáos and Belém.

In Matto Grosso and some parts of Acre a less toilsome method is practised, coagulation being effected by the addition of alum, common salt, or some other mineral. The rubber thus produced has not the hardness or even texture of that coagulated by the primitive process described above, which is always employed in the production of "fine Pará."

The *Castilloa*, from which the caucho rubber or slabb

is produced, grows on high ground, in contrast to the swamp-growing *hevea*. The *caucheros*, who collect this product, are not bound to any patron, and conduct their own enterprises, which are very wasteful ones, since the exploitation of each *castilloa* involves the destruction of the tree. The trunk is felled and cut into lengths, from which the *latex* is drained into a shallow pit, where it is coagulated with soap and potassium. It arrives at the market in large flat cakes, containing much impurity, and known commercially as Peruvian slab.

Both *manicoba* and *mangabeira* trees are species of *arbutus*, which grow wild in many parts of North and Central Brazil. The *latex* is obtained from them by incision, as in the case of the *hevea*, and the coagulation is effected by the addition of chemicals. Both are quick-growing trees, and are cultivated with success and profit in several parts of Brazil, notably in the States of São Paulo and Minas Geraes.

The facts briefly recapitulated must be grasped by anyone who wishes to understand the measures taken by the Federal Government to protect the rubber industry of Brazil. The aim of the law is to foster the planting of rubber trees in places where the carriage and cost of gathering the rubber will be light ; to reduce the high cost of living on the Amazonian valley by encouraging the local growth of food-stuffs ; to reduce the time and expense of transport throughout the whole of Central Brazil ; and so to cheapen the cost of rubber production in Brazil, that the local article may be able to compete with plantation rubber at any time.

The first measure taken was to ensure a reduction in



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Rubber. Sun Drying

the export duties. This, as representing the Territory of Acre, the Federal Government was able to do by agreement with the State administrations of Pará and Amazonas. This was but the preliminary to the passing of a comprehensive law for the protection of the rubber industry of Brazil, which became part of the law of Brazil on the 5th January, 1912.

The first section of this Act provided for the encouragement of the planting of rubber trees as follows: For groups of 12 hectares of new cultivation—seringueira, £168; caucho or maniçoba, £100; mangabeira, £60. By groups of 25 hectares of replanted land—seringueira, £136; caucho or maniçoba £68; mangabeira, £48. Those who can prove that they are growing on the same land plants for food as well, have their bonus augmented by 5 per cent. The same sections provide for the establishment of Government demonstration stations where the various rubber plants shall be grown, and where instruction in their culture shall be given and free seed distributed.

To encourage the establishment of factories where the refining and manufacture of rubber may be undertaken in Brazil itself, a bonus of £25,000 each is offered for the first adequate factory for the refining, in Belém and Manáos, of *seringa* rubber; and up to £6,250 for the first factory in each of the States of Piahy, Ceará, Rio Grande do Norte, Pernambuco, Bahia, Minas Geraes, and São Paulo, for the refining of maniçoba and mangabeira rubber. A further bonus of £3,125 is offered to the first factory of rubber articles which shall be established at Manáos, Belém, Recife, Bahia, and Rio de Janeiro.

The establishment of immigrant inns is also undertaken, and of hospitals with agricultural stations attached, where patients may be treated, medicines sold, and literature distributed, showing the proper treatment of tropical diseases, especially fevers, when no doctor is available.

Another section deals with the provision of cheaper and quicker transportation and communication in the Amazonian valley. This includes a number of light, narrow gauge railways along the Xingu, Tapajos, Negro, Branco, and other rivers ; a line from Belém through Matto Grosso to Pirapora, in the State of Minas Geraes, thus linking up with Rio de Janeiro ; and another line through the valley of the Purus river to the Peruvian boundary.

Yet another section provides for the cheapening of the cost of living in the Amazonian valley by the encouragement of the local agriculturist. The first step in this direction is the establishment of two national *fazendas* for the rearing of cattle, the growing of cereals, and the preparation of jerked beef, manioc, flour, and other food-stuffs. The private agriculturist is also encouraged by bonuses, by land grants, and by exemption from duty on agricultural machinery, stock, and other requisites for the beginnings of agricultural development.

Similarly, and in order to encourage the proper development of the Amazonian fisheries, duties on boats and all material needed to maintain a fishing, fish-salting, and fish-preserving industry will not be collected ; and a bonus of £700 a year for five years is offered for the establishment which annually turns out 100 tons of salted and preserved fish.

Whether these measures are being taken too late to protect the rubber industry, remains to be seen. The figures quoted at the beginning of this chapter, showing the displacement of wild rubber by the plantation-grown article, certainly constrain attention. The question whether Brazil is to lose the rubber-producing trade, as Colombia lost that of chinchona bark, is one of the exciting problems of the commercial world; and the outcome of the battle between wild and plantation rubber will be watched with supreme interest during the years 1914-15.

In the meantime the effect of the great fall in the price of rubber is described as follows by the British Consul in his report on the trade of Pará, issued early in 1914, in which he writes :—

“ Travellers arriving here from the Acre report the acutest distress among the *seringueiros* of the territory. Many of those in the remoter parts are described as absolutely starving, and deaths from starvation have already been announced. This is largely due to the impoverished condition of the rubber merchants, estate owners and *aviadors*, who have been unable to furnish the usual supplies.

“ The district is in any case hard to keep properly provisioned. Sometimes floods make the forests inaccessible, at other times low water prevents the navigation of the rivers. Thus in the spring and summer of 1912, a large number of steamers were kept imprisoned in the upper waters of the Purús and Juruá for many months.”

CHAPTER XII

FOREST AND MINERAL PRODUCTS

FOREST PRODUCTS.—The most important of the forest products of Brazil are the rubber and maté, each of which provides a separate industry of the utmost importance, and takes rank among the staple exports of the country. The forests further supply a wide variety of timber valuable for furniture and for building purposes. It is only because the variety is so extremely wide that the timber industry of Brazil is not yet as great as it might be. The difficulty experienced in obtaining a marketable supply of any one variety of timber within a restricted area is the outcome of a wide variety of trees, which is the characteristic of all Brazilian forests, and no great progress can be made with the timber industry until it has been organised systematically and on a very large scale. Other important products of the forests are the vegetable wax, vegetable oils, medicinal plants, vegetable fibres, nuts, and fruits.

The vegetable wax is the product of the carnauba palm (*Copernicia cerifera*), which grows freely in the North-eastern States. There are some 15,000,000 of these trees in the State of Rio Grande do Norte, which annually produces about 350 tons of wax. The leaves of the tree are cut at the end of the rainy season and dried. They are then beaten on a wooden floor with a heavy club, and as a result the wax, which forms in scales on the under side of the leaves, is detached. It is of excellent quality,

burns with a bright light, and melts at a low temperature, and is very easily worked when mixed with a small quantity of beeswax and 10 per cent. of fat. From this mixture, candles of very high quality are made. The quality and quantity of the wax could be improved by a little attention to the trees, which resist drought very well, propagates readily, and grow in all sorts of soil.

The carnauba has other uses beside the wax it yields, for the heart of the young leaves make a good substitute for cabbage, and is a customary vegetable on Northern tables. The tree yields a fruit that can be eaten ripe, or when taken unripe and boiled in several waters makes a very good and wholesome food, and is customarily eaten with milk. The trunk of the tree furnishes an excellent building timber, the leaves are used for thatching houses, and the fibres are used to make rope and to plait into hats and hammocks. Ceará and Piauhý are also the home of the carnauba palm. The annual export of wax from North Brazil is about 600 tons.

The fibre plants of Brazil are many and valuable. One of the finest is the piassaba, which produces long fibres used for making brooms, mats, and cables. The export of this fibre has shown a tendency to decrease during recent years, but this is mainly due to the fact that more of it has been employed in local manufactures. The fruit of the tree has a nut so hard that it is used for the purpose of making buttons, and forms a regular article of export.

Other fibre plants are the Brazilian hemp (*Canhamo brasiliensis*) and the aramina, both of which are now being cultivated in the State of Sao Paulo for the purpose

of making the coffee sacks, which at one time were made exclusively of imported jute. Other fibre plants cultivated are the piteira, from which textiles are woven ; and the tucum, a variety of palm tree.

On the north-eastern coasts there are countless cocoa-nut trees, the full value of which does not yet seem to have been realised by their owners. The coco-nut palm is not a native of Brazil, but was introduced early in the seventeenth century, and has thriven wonderfully on the coral sands of the north coast. The trees at present in existence are estimated at 2,000,000, and are all self-sown. A little coir and copra is exported, but cultivation and a systematic exploitation of this source of wealth are yet to come.

Akin to the fibre plants is the paina of the interior. The fruit of this tree contains soft and silky fibres, which are used for the purpose of stuffing mattresses, and are equal to kapok for that purpose. Indeed, paina commands a higher price than kapok in the markets of the world.

The medicinal plants of North Brazil are many in number, and of great value in medicine. In the forests of Matto Grosso is found the ipecacuanha, a root of general use in medicine. The gathering of this root is a regular industry among the Indians, who find it growing in the very densest part of the forest. Care is taken in digging up the roots to leave sufficient root behind for the propagation of the plant anew. The average annual export of ipeca from Brazil is about 25 tons, and the value is £15,000.

A number of plants allied to the quinquina, and known

as quinas, are gathered in the Brazilian forests for their tonic qualities and as febrifuges.

An interesting tonic stimulant is the guarana, a product of the Amazonian States. It is obtained from a creeper which is found in a wild state, and is also cultivated. This creeper bears fruit in bunches not unlike grapes, and, when ripe, the seeds of the fruit are crushed and made into paste with cocoa, sugar, and mandioca flour. This mixture is fashioned into all sorts of curious shapes, and allowed to dry in the sun. When dried, it is so hard that it has to be prepared for use by filing. The dust is taken in cold water, or made into a drink with hot water like cocoa, and is at once a fine tonic and digestive stimulant. An analysis of guarana shows it to contain 5·07 of theine, against 2·13 in black tea and 1 per cent. in roasted coffee.

Among other tonics that grow freely in the forests are quassia, and marapuana, a good substitute for kola. The depurative sarsaparilla is found everywhere, and such valuable drugs as jaborandi, manaca, and assacu as well. The araroba furnishes a yellow-coloured resinous powder, which is believed to be present in its wood owing to an animal parasite. It is of the greatest value in the treatment of parasitical skin diseases, and is known as Pahia powder or Goa powder.

These are only a few among the many medicinal plants found in the Brazilian forests, the leaves and roots of which are gathered for export. The trade in these herbs is a growing one, and amounts now to 300 tons a year in all, the value of the export being £50,000 a year.

Of the vegetable oils, the most valuable are copaiba oil and castor oil. The copaiba is a plant native to the Northern States of Brazil, and there is a regular industry in the extraction of its oil, the uses of which in medicine are well known. The castor oil plant has been introduced into Brazil, but has thriven so well that it is found growing luxuriantly in a wild state. The oil, in addition to its medical properties, is now being used as a lubricant, for which purpose it is well adapted.

Reference has already been made to the coco-nut palms of Brazil, and the fact there that is not already a large trade in copra and coco-nut oil is one that must cause surprise. The price of these commodities has doubled itself within a few years, and the demand appears to be unlimited. In the meantime, the product of the coco-nut palms is not commercially employed, a state of affairs which cannot endure very long.

The forests also produce gums in quantity, the most plentiful being copal, which is the product of the Jatoba tree. For some unaccountable reason, the export of this article has fallen off considerably, although the yield is as great as ever, and the demand, if anything, is greater in the market of the world. There are other forest trees which yield gums of commercial value, some of them, such as the elemi, yielded by the icicaraba, being of medicinal value.

As mentioned in the volume on *South Brazil*, the forest also produces dyewoods in quantity, from one of which, known as Brazil wood, the country takes its name. Vanilla also grows wild in the forests, and very freely, but is not yet cultivated; and so the anomaly of an

importation of vanilla still reproaches the enterprise of the Brazilian agriculturist.

Another famous product of the Amazonian forests is the Brazil nut, an article of regular export. There are two kinds of nuts exported, and both are known as chestnuts in Brazil. The variety most frequently seen is the triangular hard-shelled nut, familiar to every child. These grow on a tall forest tree, which is found in groves, unlike most trees of the Brazilian forest. The ripened fruit of the tree is a heavy cylindrical pod, which may contain from twenty to thirty of these nuts. The pods fall from the trees when ripe, and are gathered by people who make a regular business of collecting them. These nuts form an important article of export from the State of Pará, the annual value of North Brazil's export being over £200,000 a year. There are vast expanses of forest rich in these trees, that still remain unexploited, the nuts going to waste. In addition to their use for dessert, the Brazil nuts yield a valuable vegetable oil.

The Amazonian States already export valuable woods in quantity, but the trade is still only in its infancy. The stores of such valuable woods as acajou, rosewood, cedar, jacaranda, and pallisandre held by the "selvas" cannot be overestimated. Some hundreds of varieties of timber—all useful for furniture making or building—were recently shown in an exhibition of the products of the Amazonian States. Their systematic exploitation is retarded by that characteristic of the Amazonian forest on which emphasis has already been laid. The trees do not occur in groups, but singly and at considerable distances apart; and the collector of valuable timber

of any one variety would have to cover a large area of forest in his selection of suitable trees. For this reason, and because of the great distance between the trading points on the Amazon, the trade has not been as prosperous and progressive as might have been expected. It has also had to contend with a heavy State export duty and a lack of suitable labour.

In the chapter dealing with the "Rubber Industry," an outline has been given of the measures it is proposed to take in order to cheapen communications and to reduce the cost of living in the Amazonian area. Those measures are designed to benefit the rubber industry primarily; but there can be no doubt that, when the conditions against which the worker in Amazonia struggles have been ameliorated, there will be a remarkable development of other forest industries, and that Brazil will really begin to reap the benefit of its vast and latent forest wealth.

MINERAL PRODUCTS.—Like the forest wealth of North Brazil, the mineral resources still remain undeveloped. This is largely due to the lack of communications and the immense distances which have to be traversed. Such conditions only permit of the realisation of very accessible mineral treasures, and that realisation was accomplished nearly a century ago. The easily-won alluvial gold of the Central States was at that time exhausted by the enterprising Paulistas, whose amazing expeditions for gold and diamonds resulted in the partial exploration of the very heart of Brazil.

Another retarding influence to mining development is the unsatisfactory mining law of Brazil, which makes all

mineral discoveries the property of the owner of the land. In some States, and notably in Bahia and Minas Geraes, this law has been supplemented by State legislature, designed to encourage the mining prospector and the mining investor. In such States only is there any real display of mining activity.

But sufficient is known of the geology and conformation of the country, and discoveries sufficiently widespread have been made, to establish the fact that almost every State of Brazil holds undeveloped mineral wealth that will soon be a source of actual prosperity to the country.

The following *résumé* of the discoveries made and reported in North Brazil will show how widely the mineral riches of the country are spread—

Alagôas. Iron and bituminous schist.

Amazonas. Gold, iron, crystal, carbonate of lime.

Bahia. Amethyst, potters' clay, lime, lead, copper, diamonds, emeralds, sulphur, iron, silver, malachite, manganese, marble, nitrates, gold, rubies, topazes, alum, jade, and monazite sands.

Ceará. Agate, amethysts, antimony, arsenic, lead, copper, crystal, diamonds, iron, graphite, mercury, gold, manganese, alum, silver, and zinc.

Goyaz. Gold, diamonds, agate, crystal, sulphur, iron, mica, topaz, and other precious stones.

Maranhão. Gold, silver, platinum, anthracite, arsenic, copper, crystal, iron, marble, petroleum, zinc, sapphires, and other precious stones.

Matto Grosso. Gold, diamonds, copper, crystal, iron, mercury, and precious stones.

Pará. Gold, copper, mercury, and petroleum.

Parahyba. Gold, precious stones, anthracite, lead, and iron.

Pernambuco. Gold, anthracite, crystal, iron, granite, and petroleum.

Piauhy. Gold, amethysts, lead, copper, crystal, diamonds, sulphur, emeralds, iron, mica, kaolin, alum, silver, and precious stones.

Rio Grande do Norte. Gold, sulphur, and iron.

Sergipe. Gold, silver, talc, and precious stones.

Territory of Acre. Gold, carbonados, and precious stones.

Actual mining, however, is practically confined to two States of North Brazil: Bahia and Goyaz. The chief mining products of Bahia are monazitic sands, manganese, and carbonados; diamonds are also sought and marketed in irregular quantities. The monazitic sand, which forms a regular article of export from Bahia, contains thorium in considerable quantities; and the use of this metal in the manufacture of incandescent mantles causes the demand for the sand. A heavy export duty is placed on this sand, the State deriving a considerable revenue from the exports. Manganese is mined in Bahia at Nazareth, where there is a very rich lode of this metal. Like the monazitic sand, it is subject to an export duty, which imposes a heavy tax on mining operations.

The mining of Goyaz is picturesque rather than effective, but is conducted in a way that points to the existence somewhere in that State of rich mines of gold and plentiful deposits of diamonds of the finest quality.

The gold miners of Goyaz correspond to the class who were called in California and Australia "fossickers."

They admit that the alternations of the season prevent them from availing themselves of the opportunities which exist in plenty. At one time of the year it is too dry to continue their work, then comes the rainy season, and the workings are flooded by the torrential downpour. They wash the river sands after every rainy season, and find always a renewal of the alluvial deposit, so that every flood brings them new gold from some storehouse not yet discovered. The rivers Maranhão, Manuel Alves, Caixas, Gayapos, and many others are worked in this way ; but actual mining in the modern sense of the word does not take place.

The diamond mining of the State, if it can be called mining, is just as perfunctory. The diamond seekers are called "garimpeiros," and they conduct their operations in such rivers as the Araguaya, Claro, Tres Barras, and Desengano. They only work during the dry season, for only then is their method possible. A band of these men will go out upon the river in a boat and sink in the water a large basket weighted with a big stone. Then one dives to the bottom and begins to fill the basket with handfuls of gravel taken from the river bed. When the first diver is forced to come to the surface, his place is taken by another, and yet another, until the basket is filled. The basket is then hauled to the surface, and the exciting search for diamonds begins. Days may pass at this work without any reward, but the "garimpeiro" has enough of the gambler in his composition to go on diving in the hope of chancing on some fine stone which will permit the whole party a reprieve from such trying work for a whole season.

In Goyaz, too, are the large deposits of fine rock crystal from which are drawn the Brazilian glasses so prized by the oculist. There exists a range of hills called the Crystaes, near Santa Luzia, where these deposits are worked, and where an inexhaustible supply of rock crystal of all colours still remains.

In spite of the wide distribution of the precious and useful minerals, the metal output of Brazil is still inconsiderable. Its exploitation will probably begin with the development of the wonderful iron resources of Minas Geraes, which have formed the subject of the chapter on "Mining" in the volume on *South Brazil*.

Some of the most appreciated species of the timber of Brazil are the following—

Angelim amargoso, Aracuín (*Andira anthelmintica*, Benth.); Angelim pedra (*Andira spectabilis*, Sald.); Angelim araroba, Angelim doce (*Andira araroba*, Macedo); Aderno, Chibatan, Ubatan (*Astronium commune*, Jacq.); Arapoca vermelha (*Galipea rubra*); Araçá do matto (*Psidium araçá*, Raddi); Araribá amarelo, Potumájú (*Centrolobium robustum*, Mart.); Araribá vermelho (*Centrolobium tomentosum*, Benth.); Angico (*Piptademia rigida*, Benth.); Araribá (*Pinckneia rubescens*, Fr. Allem. e Sald.); Aroeira da matta (*Schinus aroeira*, Linn.); Braúna, Garaúna, Maria Preta (*Melaxylon Braúna*, Schott); Bicuiba (*Myristica officinalis*, Mart.); Cangerana (*Cabranea cangerana*, Sald. Gam.); Canella Capitão-Mór (*Nectandra myriantha*, Meissn.); Canella sassafráz (*Mespilodaphne maseora*, Meissn.); Canella preta ou prego (*Nectandra mollis*, Nees); Ombuy vinhatico (*Enterolobium lutescem*, Mart.); Anda-assú, Cotieira (*Ophamnesia princeps*, Vell.); Carne de vacca (*Rhopala olegans*, Shott); Cutucanhê (*Rhopala brasiliensis*, Kolotzch); Cedro batata (*Cedrela fimbilis*, Vell.); Carobuçú (*Jacarandá coáaia*, Don.); Cerejeira (*Prunus brasiliensis*, Linn.); Copahyba (*Copaifera officinalis*); Cravo Páo bravo (*Dicypellium caryophyllatum*, Nees); Genipapeiro (*Cenipa americana*, Linn.); Gonçalo Alves (*Astronium*

axinifolium, Schott.); Grapiapinha Garapa (*Apuleia precox*, Mart.); Grossaph (*Moldenhanera speciosa*, Fr. Allem.); Guapeva (*Lucuma laurifolia*, Alph. De Cand.); Ipé tabaco (*Tocoma ipé*, Mart.); Ipé preto (*Tecoma eurialis*, Fr. Allem.); Jacarandá cabiuna (*Dalbergia nigra*, Fr. Allem.); Jabotá (*Hymenae combaril*, Linn.); Massaranduba (*Lucuma procera*, Mart.); Oiti verdadeiro (*Moquilea tomentosa*, Arrud. Cam.); Páo Brazil (*Caealpinia echinata*, Linn.); Páo Ferro (*Swartzia tomentosa*); Sucupira amarella (*Bowdichia nitida*, Spruce); Vinhatico (*Echirosperrum balthazarii*, Fr. Allem.); etc., etc.

The value of the timber exported for the year 1912 was about £100,000, the ports of shipment being as follows:—Paranaguá, Foz do Iguassú, Santos, Rio de Janeiro, Bahia, Belém, Porto Alegre, Porto Murtinho, Pernambuco, and Manáos.

CHAPTER XIII

PASTORAL INDUSTRY

CATTLE.—Brazil is the fourth cattle country of the world in point of quantity, being exceeded in numbers only by the United States of America, Russia, and the Argentine Republic. The quality of the Brazilian cattle is not high, but this criticism applies rather to the herd of North and Central Brazil than to those of the South. The herds of Brazil are estimated at 25,000,000, and of these the Northern and Central States are estimated to possess—

State.	Head of Cattle.
Matto Grosso	2,000,000
Ceará	1,700,000
Goyaz	1,500,000
Piauhy	1,250,000
Pará	1,200,000
Bahia	1,000,000
Rio Grande do Norte	750,000
Parahyba	700,000
Maranhão, Alagoas, Pernambuco, and Sergipe and Amazonas	2,000,000
	12,100,000

There is good reason for the belief that the pastures of Central Brazil afford scope for the building up of a pastoral industry as great as that of the Argentine Republic. These pastures stretch over a wide area between the rivers Paraguay, Paraná, and Apa. In the dry season these meadows are always covered with waving grass; when the rainy season comes they are

flooded to the depth of some inches, but the grass is always flourishing.

In this region there is always pasture for ten times the 2,000,000 cattle the State of Matto Grosso now claims. The opportunity is being seized by a group of capitalists, who are connected with the railway development of Matto Grosso, and large herds have been bought and large tracts of land acquired, with a view to developing a ranching industry. The scheme also embraces one for the improvement of the local stock by the introduction from Texas of stud animals of the best British strains, especially Herefords and Durhams. They are taking this stock from Texas rather than from Great Britain, because the Texas stock better resists the complaint known as Texas fever, which has in the past caused the greatest mortality among cattle imported from Great Britain.

The races of cattle that have existed in this pastoral paradise are descended from the ancient stock introduced from Portugal in the early days of the Colonial era in Brazil. The names given to them by students of the growth of the different breeds of Brazilian cattle are "curraleira," "pantaneira," and "Cuyabara." They are red cattle with short horns, but a very savage temper; and their existence in the spacious water meadows of Matto Grosso is life in a wild state. Some 250,000 are exported on the hoof each year to the coastal States, travelling slowly by the rough tracks of the interior. From their native pasture to the border towns of Minas Geraes and São Paulo is a journey of some months, and when they arrive at these places they have to be rested

for many weeks before they can travel to the pastures, where they are fattened for provisioning of the large cities on the coast.

Matto Grosso also has several "charqueadas," or "saladeros" as they are called in the Argentine Republic, where the jerked beef, which is one of the staple foods of the Brazilian workman, is manufactured. There is a factory at São Luiz de Cáceres for the manufacture of meat extract. Matto Grosso also exports live beasts to Paraguay, and about 700 tons of dried cured leather, and 100,000 salted hides each year.

The pastures of Goyaz are not so low-lying as those of Matto Grosso, but they are well watered and supplied with some of the most valuable forage plants known in South America. Among these are the Capim Mimosa, and the Capim Marmaleda, both eagerly sought by the stock, and of excellent fattening properties. The pastures are watered by the innumerable rivers of the State, which is the watershed of one-half of South America. The stock are similar to those found in Matto Grosso, though in places they have been crossed with Zebu stock, introduced from India, a step around which a wide controversy is now raging among cattle experts. The Goyaz cattle travel to market by road, or rather, by forest track, just as those of Matto Grosso do, and the weakening effect of these long journeys causes great loss among the herds.

The future of the pastoral industry in these two central States is a bright one. It is dependent upon the provision of transport facilities, so that the cattle can be carried to their market without the impoverishing travel now

necessary. The construction of the North-East and Goyaz lines of railway, now approaching completion, will obviate many of the difficulties against which the pastoralists of the interior have struggled in the past. The other necessity to the establishment of a great pastoral industry in the interior is the improvement of the strain of cattle now existing. That, as already stated, is being undertaken on scientific and commercial lines in one important instance, and the result to be obtained from that experiment will no doubt have a marked benefit upon the whole cattle-breeding industry of the interior.

Cattle breeding in the North is carried on under circumstances vastly different to those of the South, or of the Centre. The pastoralists of the North have to struggle with all kinds of enemies, the most dangerous being the recurrent droughts, which cause great mortality among the herds. When the rainy season fails, the graziers of Ceará and Piauí know that the forage plants on which they rely for the feed for their cattle will not spring again; and it is necessary to send the cattle away at once, to save any proportion of them.

There are travelling graziers from the States further south, from Bahia and Minas Geraes, who know how to take advantage of these opportunities. They are known as "Boiarios," and they can buy cattle at the rate of £1 a head, when drought threatens. Then the beasts are travelled south through the sertao, or bush-covered plateau of the interior. Some are lost on the way through thirst and lack of fodder, but the greater part are driven safely to the pastures further south, where they are

fattened and bring big prices at the cattle fairs of Minas Geraes and Bahia.

But in good seasons the business of cattle breeding is a lucrative one in these Northern States. The rains ensure a luxurious growth of forage plants, and the cattle fatten and multiply apace. There is room in the *sertao* for all, and the only trouble of the "sertanejo," as the cattlemen of the North are called, is the havoc wrought by jaguars and other beasts of prey of the same tribe. A standing reward of an ox for each jaguar slain is given by the cattle owners.

These northern grazing areas are diversified by large thickets of thorny bush, in which the wild cattle are accustomed to take refuge; and in order to follow them into these retreats, the "sertanejo" dresses himself from head to foot in deer skin, thick and a perfect armour against the thorns. Mounted on a sturdy little horse, and clad from head to foot in his yellow armour of deerskin, the "sertanejo" presents a picturesque appearance.

The breed of cattle in the North is similar to that of the centre of Brazil, and is small and bony. The cattle of Piauhy yield abundance of good milk in a favourable season, and the local cheese is much esteemed throughout Brazil. The necessity for improving the breed is the first consideration with which the graziers of this part of the country are confronted, but up to the present very little has been done in this direction. Nor is there any systematised attempt to manufacture the dried beef which commands so ready a market in all parts of Brazil. The "charqueadas" of Rio Grande do Sul are completely

wanting in the North ; and the most that is done is the preparation of a little "carne de vento," meat dried in the open air, and inferior in keeping qualities to the factory-made "charque."

The State of Pará has also wide extents of pasture land, inferior to none in Brazil for the purpose of rearing cattle. The principal centre of cattle raising in the State is the island of Marajo, but there are many other localities where the same facilities exist. The pastures are known as "varzeas," and consist of the low-lying lands free of forest, which are covered with water in the rainy season, and overgrown with luxuriant herbage when the floods have subsided. It is no uncommon thing to see these pastures a foot under water and the grass standing high above the water ; while the cattle are grazing peaceably, sunk to their knees in the flood. Their enemies are the crocodiles, with which the rivers swarm, and the shoals of that very small but fierce Brazilian fish, the piranha. These shoals of piranha attack a beast with startling suddenness, and in a very few moments nothing but his bare bones are left. The graziers wage war on the crocodiles, destroying them in systematic battues, but are unable to keep the pests down.

Cattle raising is a profitable industry in Pará, and promises to be even more so when the facilities for communication are further developed, there being neither roads nor railways in the State, and transport by river not lending itself to the carriage of live stock in quantities.

A word has already been said of the cattle fairs of Brazil. These are held in many States, but the most famous are those of Minas Geraes and Bahia. In the

latter State there are fairs held frequently at Feira de Santa Anna, at any one of which 15,000 to 20,000 animals may change hands. Most of them have been bought in the interior or the far North, and fattened on the pastures of Bahia after having travelled many hundreds of miles from the North or the Central States.

The greatest expansion of the cattle-grazing industry may be expected in the Central States of Goyaz and Matto Grosso, in Pará and the lower parts of Amazonas; and on the north coast, from the State of Piauhý.

HORSES.—The best horses of North Brazil, and, indeed, of the whole country, are those bred in the north of Goyaz, and known by the name of “curraleiros.” They are a small but hardy race, and can travel great distances without being knocked up. In the same district are bred mules of a very good stamp, and it is a curious thing that the horses and mules of North Goyaz are those commonly in use as transport animals in Bolivia. They travel to that destination via Macedina and Cuyabá, and have to traverse over 1,000 miles before they reach their market. In Matto Grosso, horses do not thrive, being subject to a complaint known as “peste de cadeira,” which is believed to have its origin in Bolivia. As a consequence, cattle are used as beasts of burden and even as saddle animals in Matto Grosso, and also in the Amazonian States. In the Northern States, such as Ceará and Piauhý, horses are plentiful enough, but are of poor quality. They possess little courage or endurance, and are of a degenerate race.

GOATS.—The goats of the Northern States of Brazil are the descendants of the original flocks, introduced from

Cape Verde Islands, and they have thriven in the *sertão* of Ceará and Rio Grande do Norte, where less hardy animals would have perished. The skins are one of the most important articles of export for these States, and the trade is capable of wide expansion.

Sheep, pigs, and the smaller domestic animals find little place in the North, their habitat in Brazil being the Southern States.

CHAPTER XIV

AGRICULTURE

THE chief agricultural products of North Brazil are cocoa, sugar, tobacco, and cotton, though the wide range of climate and soil permit many other things to be grown, including cereals, such as maize and rice, and an abundant supply of the ever useful mandioca (which still remains the staple food of the labouring classes). Tropical fruits are produced in the North in abundance, and this very lavishness deters agricultural activity among the landholders of the fertile States.

The chief drawback to the agricultural progress of North Brazil lies in the fact that the bulk of the field workers are descendants of the negro races, being either freed slaves or the descendants of slaves. These people adhere to the most primitive methods of cultivation, require but little for their subsistence, and easily draw that little from the fertile fields they occupy. There is, of course, a fair sprinkling of white Brazilian agriculturists in the North, and to the energy and enterprise of these is mainly due the progress made in agriculture.

It has further to be noted that some of the Northern States, and more notably Ceará, Rio Grande do Norte and Parahyba, are subject to droughts of a long-protracted kind. It is an unfortunate circumstance that these visitations have afflicted the very States whose citizens have a well-deserved reputation for industry and enterprise. Ceará, in particular, has suffered from these droughts to an extent which has discouraged the struggling

planters, and driven them to the Amazonian States, to join in the quest for rubber. For these reasons the agricultural progress of the North has been retarded ; but, under the fostering care of the Department of Agriculture, vast improvements are now being made.

Of the staple products of the North, the most valuable for export purposes is cocoa.

COCOA.—Bahia is the principal cocoa-growing State in Brazil, though the tree does well elsewhere. It is, indeed, indigenous to the Amazonian States, and thrives there, but little attention being needed for its culture. Such is the mania for rubber production in Pará and Amazonas, that those States at present produce little more cocoa than suffices for their own consumption, though they might easily be among the first cocoa-growing countries of the world.

Like the coffee tree, the young cocoa tree requires a good deal of attention, and does not yield until six years old. After that, it will produce two crops a year for a man's lifetime ; indeed, a cocoa plantation is one of the most profitable possessions known. The demand for the commodity has not yet reached its limits ; while the labour needed in the cultivation and preparation of cocoa is so little, that it can be grown at a good profit, even if the price should decline below its present figure.

The Brazilian export of cocoa during 1911 and 1912 was as follows—

State.	1911. Weight in Tons.	1912. Weight in Tons.
Bahia ..	32,261	27,782
Pará ..	2,566	1,856
Others ..	166	853

The figures for the first eleven months of 1913 show an advance of 1,000 tons over those of the preceding year.

COTTON.—Cotton thrives everywhere in the North-East of Brazil, the principal cotton-growing States being Pernambuco, Alagoas, Rio Grande do Norte, Maranhão, Parahyba, and São Paulo. Both tree cotton and the herbaceous variety do well, but the bulk of the Brazilian cotton is tree cotton. The seed and the oil expressed from it are also important articles of Brazilian export.

The heavy import duty on cotton goods has served to encourage the cotton textile industry, and the exports of raw cotton showed in 1908 a strong decline. This was due to the increase in the local consumption, but expansion of cotton growing is now taking place, and at a rate even greater than the satisfactory expansion in the textile industry. The result is that the export of raw cotton from Brazil is again showing a tendency to increase.

The cotton production of North Brazil is as follows—

State.					Tons.
Alagoas	..	..	..	..	9,000
Ceará	..	..	..	..	7,500
Maranhão	..	..	..	..	4,000
Parahyba	..	..	..	..	25,000
Pernambuco	..	..	..	..	17,000
Piahy	..	..	..	..	800
Rio Grande do Norte	..	..	..	..	11,000
Sergipe	..	..	..	..	4,000

SUGAR.—Brazil grows the finest sugar-cane in the world and is able to supply its own large demand for sugar, and has a balance left for export. The cane is propagated in three ways : from seed, from shoots, and from sections of the stalk. The cane obtained from seed

requires longer to mature than that propagated in other ways. There are two seasons for planting in all parts of North Brazil, and, in consequence, two crops of cane each year.

Under the auspices of the Government, experiments have been made with all sorts of sugar-cane, to discover which is best suited to the soils and conditions of Brazil. In all, forty-two varieties have been made the subject of experiment, and a number of these are now favoured, according to the soil in which the cane is planted. In Brazil, the cane takes fifteen months to mature, and yields a second crop from the roots ten months after being cut. As explained in the chapter on the "Manufacturing Industries," the cane-growers suffer a great deal from the old-fashioned means of milling, to which they are confined in many agricultural centres; but the cultivation of sugar-cane is a prosperous and expanding industry.

A further article derived from the cane is the spirit locally known as *cachaça*, which, to quote a well-known writer on Brazil, "may be used either as a beverage or as methylated spirits." This spirit is sold at a very low price in Brazil, and is an important article of export. The local consumption of sugar in Brazil amounts to 300,000 tons a year, and the production is as follows—

State.					Tons.
Alagoas	..	..	..	..	48,000
Bahia	..	..	..	..	27,000
Maranhão	..	..	..	..	4,800
Parahyba	..	..	..	..	12,000
Pernambuco	..	..	..	..	108,000 to 150,000
Rio Grande do Norte	..	..	..	..	3,600
Sergipe	..	..	..	..	48,000

South Brazil also produces 100,000 tons annually ; and some of the States not mentioned, such as Goyaz and Matto Grosso, also produce an appreciable quantity of sugar.

TOBACCO.—Tobacco of good quality is grown in nearly every State of Brazil, and the local consumption is very heavy. Bahia is practically the only State which grows for export, and now produces nearly 30,000 tons a year. Careless growing and careless preparation still militate against the quality of the leaves, but this fault is being overcome ; and the quantity and value of the tobacco exported show a gratifying increase in each successive year. The value of the export for 1913 was in the neighbourhood of £2,000,000, and the weight nearly 30,000 tons.

The returns of export for 1911 and 1912 will show how the export trade is monopolised at present by the State of Bahia—

State.		1911. Weight in Tons.	1912. Weight in Tons.
Bahia	..	18,017	24,102
Others	..	472	603

The tobacco most esteemed in Brazil is that grown in the Central States of Goyaz and Matto Grosso.

MANDIOCA.—Mandioca is indigenous to Brazil, and will grow almost anywhere in that country with very little cultivation. There are two varieties : the sweet and the bitter root. The latter is most esteemed, and yields very heavy crops, the roots weighing up to 20 lb. In its natural state, bitter mandioca is a poison, and is prepared for consumption by washing and rasping the roots. The pulp is then washed in clear water, and the

juice pressed out of it. This process is repeated until the poisonous juice has all been expressed, and the product is then dried. The flour which results is very nutritious, and is used in stews or baked into cakes. The mandioca root also makes the best quality of tapioca known to commerce, and for this purpose is exported. Another way of preparing it for export has recently been invented, and is being employed with success. This is the slicing and drying of the root. Thus prepared, the mandioca root commands a ready sale in Germany and Switzerland, where it is the base of a manufactory of alcohol. Mandioca bread is the staple of the rural districts in Brazil, but in the larger cities wheaten bread is being more and more used in its place.

FRUIT.—In addition to the guavas, mangoes, pineapples, and bananas that are now finding their way to the United States, there are many fruit-bearing palms which form the base of the rare fruit preserves of the State of Maranhão. Pernambuco has a large export of pineapples, and Bahian oranges are renowned. The development of the fruit industry is one of the objects of the Brazilian Department of Agriculture.

This brief review of the agricultural position in North Brazil will be sufficient to prove that the Department of Agriculture has a gigantic task before it. It has set out with energy to cure a conservative and indolent people of primitive methods of tilling the soil. The object is not to supplant the plantation by the farm, but to add the small farm with its various products to the well-managed plantations of the country. To this end the following are some of the steps taken.

SCHOOLS OF AGRICULTURE, both primary and advanced, have been instituted, where apprentices and pupils are instructed in up-to-date methods of farming, and in the use of modern agricultural appliances. Experimental farms have been founded, where the best products of the zone are grown ; and the local soils are tested, and their best management and use is established. Peripatetic lecturers on agriculture are paid by the department to travel from place to place, affording instruction in the methods and theory of agriculture. Permanent farming exhibitions have been instituted, where all the most modern farming appliances may be seen at work. A periodical gazette of agriculture is issued, and distributed free of charge to the agriculturists of the country.

In the Northern States, which suffer from drought, reservoirs have been built for irrigation purposes. Recognising that this can only be a palliative measure, the Department has experimented with North American methods of "dry farming" and engaged experts in this science for the instruction of those who may wish to learn it. Dry farming areas have been established, and there the methods employed are demonstrated.

In these ways, and by the offer of bonuses, the Department is laying the foundation of a future agricultural prosperity for North Brazil.

CHAPTER XV

MANUFACTURING INDUSTRIES

THE manufacturing establishments of importance in North Brazil are distributed among the States as follows—

State.	Number.	Capital in £ sterling.	Production in £ sterling.	Workers employed.
		£	£	
Alagoas ..	47	729,192	699,752	3,855
Amazonas ..	93	432,264	997,464	1,267
Bahia ..	83	1,891,812	1,732,728	10,000
Ceará ..	24	432,264	228,164	11,353
Goyaz ..	15	107,800	164,732	868
Maranhão ..	19	902,680	509,355	4,595
Matto Grosso..	16	910,000	296,666	3,870
Pará ..	55	766,866	1,214,866	2,544
Parahyba ..	43	332,700	292,994	1,465
Pernambuco ..	126	4,015,266	3,845,086	12,388
Piahy ..	3	87,392	79,540	355
Rio Grande do Norte ..	43	460,400	206,299	2,063
Sergipe ..	103	944,857	987,407	3,027
	670	12,013,493	11,455,053	57,650

As the total number of important manufacturing establishments in Brazil is 3,664 and the total number of workers employed is 168,764, it will be seen that the manufacturing industries are not nearly so well developed in North and Central Brazil as in the South.

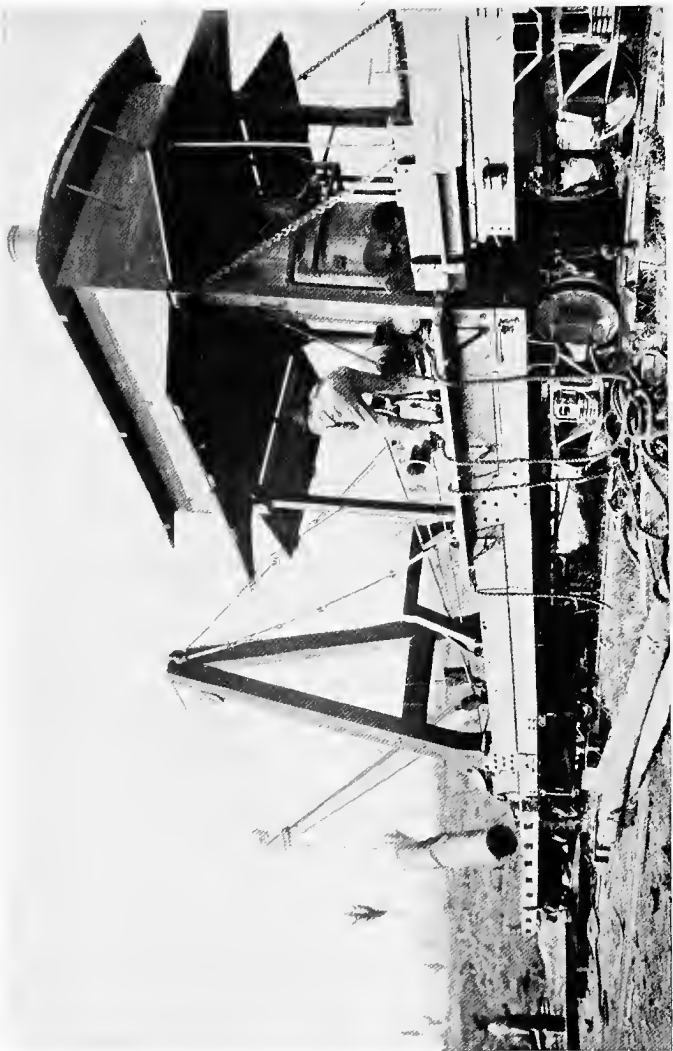
COTTON MANUFACTURE.—The most important industry in North Brazil is the weaving of cotton tissue. Although the textile industry has not reached the stage of importance in the North that it has attained in the large cities

of South Brazil, it is nevertheless represented by some sixty cotton mills, some of them of considerable size and extensive output. There are some 17,000 workers employed in this industry in North Brazil.

The cotton mills are distributed as follows : Bahia (13), employing 4,000 workers ; Maranhão (13), with 3,750 workers ; Pernambuco (8), with 3,700 workers ; Alagôas (5), with 2,000 workers ; Sergipe (4), with 1,300 workers ; Ceará (6), with 1,000 workers ; Parahyba (1), with 600 workers ; and Rio Grande do Norte (1), with 300 workers.

SUGAR FACTORIES.—Next in importance to the textile industry is that of the extraction of sugar from the raw cane. In this industry, large modern factories are beginning to supersede the little wasteful mills which were formerly the only means of sugar-making. The equipment of one of these large mills may cost anything from £20,000 to £100,000, and there are in the State of Pernambuco alone fifty such establishments. There still remain in the same State quite 1,500 of the old “ bangues ” with their primitive appliances. It is estimated that in these little mills only about 6 per cent. of sugar is recovered from the cane treated, although the percentage of sugar contents is as high as from 14 to 16. It can be imagined that if sugar-cane can be profitably grown under such circumstances, it will yield splendid returns to agriculturists when they are able to obtain an adequate proportion of the sugar contents of their products.

The sugar-mills (modern) of North Brazil are distributed as follows : Pernambuco (50), with 5,200 workers ; Sergipe (62), with 1,300 workers ; Bahia (7), with 1,000



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S. Brazil Railway Co

workers ; Alagôas (6), with 800 workers ; Maranhão (3), with 750 workers ; Matto Grosso (5), with 300 workers ; Parahyba (5), with 270 workers ; Rio Grande do Norte (4), with 150 workers.

TOBACCO MANUFACTURE.—Another important industry of North Brazil is the manufacture of cigars and cigarettes, and the preparation of tobacco for the market. The tobacco grown in Brazil is everywhere of excellent quality, and especially in the central States of Matto Grosso and Goyaz. Unfortunately, the care in drying and sorting is not as great as it should be, and the cigar-makers of Brazil are constrained to import wrappers of Sumatran and other Eastern tobacco for their work. But the cigars produced are of good flavour and fine aroma, and bear a reputation which they have well earned. Bahia is the State which cures and prepares the most tobacco, but the industry is well distributed in North Brazil, as the following list will show : Bahia (13 establishments), with nearly 4,000 workers ; Pernambuco (3), with 750 workers ; Alagôas (6), with 350 workers ; Parahyba (6), with 200 workers ; Amazonas (5), with 100 workers ; Rio Grande do Norte (2), with 40 workers ; Pará (3), with 33 workers ; Ceara (3) ; Goyaz and Maranhão (1 each).

TIMBER.—One of the leading industries of the Amazonian States is the preparation of timber for market and the construction of articles of woodwork. The saw-mills of North Brazil are distributed as follows : Amazonas, 7 ; Pará, 5 ; Sergipe, 5 ; Pernambuco, 3 ; and Bahia, 1.

TANNERIES are represented in the following States :

Alagôas, 3; Goyaz, 4; Parahyba, 3; Pernambuco, 2; and Sergipe, 3.

FOUNDRIES AND METALWORKS are general in all these States: Amazonas, 4; Bahia, 3; Ceará, 1; Pará, 4; Pernambuco, 5; and Sergipe, 9.

POTTERY.—There is excellent potters' clay in North Brazil, notably in the Amazonian States, and some of the towns on the great river turn out pottery that has more than local fame. The distribution of the potteries is: Amazonas, 6; Alagôas, 4; Pará, 3; Parahyba, 3; Pernambuco, 2; Bahia and Maranhão, 1 each.

HAT AND SHOE FACTORIES are well distributed, the hat-making States being: Pernambuco, 2; and Bahia and Pará, 1 each. There are shoe factories as follows: Sergipe, 8; Alagôas, 7; Bahia, 3; Goyaz, 3; Parahyba, 3; and Pernambuco, 2.

Establishments for the preparation of the medicinal plants found in the forests, and for the extraction of the medicinal and other oils produced in North Brazil, are distributed as follows: Amazonas, 8; Alagôas, 3; Parahyba, 5; Pernambuco, 4; Bahia, 2; Sergipe, 2; and Goyaz, 2.

PRESERVING ESTABLISHMENTS are many, some of them existing for the preparation of dried meat or fish, others for the manufacture of fruit preserves from the delicate fruit which abounds. Matto Grosso has two "charqueadas" or factories for making dried beef, and one for preparation of beef extract. Amazonas makes chocolates at three factories, and has six preserving works; Goyaz prepares a special mango jelly, famous all over Brazil, and Maranhão has a special brand of fruit preserves as well.

There are MATCH FACTORIES in Manáos and Recife ; and breweries at Manáos, Bahia, Recife, Belém, Goyaz, and Corumbá.

Finally, there are SOAP AND CANDLE FACTORIES in nearly all the Northern States, their distribution being : Alagôas, 5 ; Amazonas, 2 ; Bahia, 3 ; Ceará, 2 ; Goyaz, 1 ; Maranhão, 1 ; Pará, 4 ; Parahyba, 1 ; Pernambuco, 5 ; and Sergipe, 2.

The following is a brief summary of the more important industries of each State—

Amazonas. Foundries, trunk-making, tinware, biscuits and preserves, chemical products, wood, and hammocks.

Alagôas. Cotton stuffs and sugar.

Bahia. Tobacco, cigars and cigarettes, cotton stuffs, sugar, and hats.

Ceará. Cotton stuffs.

Goyaz. Sugar, butter, cheese, tobacco, preserves.

Maranhão. Cotton stuffs and sugar.

Matto Grosso. Maté, preserved meat, dried meat, meat extract, and sugar.

Pará. Wood, beer, pottery, metalwork, and chocolate.

Parahyba. Cotton stuffs and sugar.

Pernambuco. Sugar, cotton stuffs, soap and candles, lime and cement, tobacco, chemical oils and products, metalwork.

Piauhy. Cotton stuffs.

Rio Grande do Norte. Salt, cotton stuffs, and sugar.

Sergipe. Sugar and cotton stuffs.

CHAPTER XVI

IMPORTS AND EXPORTS*

I.—GENERAL

THE following table shows the value of Brazilian imports and exports (merchandise only) from 1901 to 1911 inclusive—

		Imports (£).	Exports (£).	Balance of Exports over Imports. %.
1901 ..	..	21,377,270	40,621,993	52.6
1902 ..	..	23,279,418	36,437,456	63.9
1903 ..	..	24,207,811	36,883,175	65.6
1904 ..	..	25,915,423	39,430,136	65.7
1905 ..	..	29,830,050	44,643,113	66.8
1906 ..	..	38,204,041	53,059,480	66.6
1907 ..	..	40,527,603	54,176,898	74.8
1908 ..	..	35,491,410	44,155,280	80.4
1909 ..	..	37,139,354	63,724,440	58.3
1910 ..	..	47,871,974	63,091,547	76.0
1911 ..	..	52,944,809	66,838,892	79.2

The following table shows the value of the imports and exports of metallic specie and foreign bank notes for the same period—

		Imports. (£)	Exports. (£)	Balance of Imports over Exports. (£)
1901 ..	..	1,398,431	58,314	1,340,117
1902 ..	..	1,078,444	31,936	1,046,508
1903 ..	..	951,375	102,442	848,933
1904 ..	..	804,953	8,900	796,053
1905 ..	..	2,909,533	10,731	2 898 802
1906 ..	..	2,963,446	32,750	2,930,696
1907 ..	..	4,410,621	15,329	4,395,292
1908 ..	..	141,736	20,700	121,036
1909 ..	..	8,851,619	11,408	8,840,211
1910 ..	..	9,439,851	2,331,938	7,107,913
1911 ..	..	7,840,336	2,406,090	5,434,246

* TARIFFS. An English translation of the new Draft Customs Tariff for Brazil with comparison of the proposed and existing Rates of Duty is now procurable.

The general growth exhibited in these tables continued in 1912; in 1913 there was a slight set-back, not in quantities exported, but in values, resulting from a considerable fall in the prices obtainable for coffee and rubber. In the following analysis of imports and exports the figures given are those of 1911, the figures for later years not being as yet verified.

II.—IMPORTS ANALYSED

The imports of merchandise for 1911 amounted to 795,563 : 450\$ (paper), *i.e.*, £52,944,809, of which approximately—

56 %	consisted of manufactures ;
24 %	„ foods and food-stuffs ;
19 %	„ raw materials or partly manufactured articles ;
0.4 %	„ living animals.

Specie was also imported of the value of 117,612 : 220\$ (paper), *i.e.*, £7,840,336, making a grand total of 913,175 : 670\$, *i.e.*, £60,785,145.

The largest classes of imports are as follows—

	Milreis, paper.
1. Engineering machinery	86,898,467
2. Steel and iron manufactures	81,424,363
3. Cotton manufactures	76,707,949
4. Coal, stones, earth, etc.	63,826,094
5. Wheat	36,053,110
6. Wines	35,143,734
7. Wheat flour	29,966,336

The imports are officially classified under four heads, viz. : (1) Live animals ; (2) primary materials and those used in the arts and industries ; (3) manufactured articles ; and (4) alimentary products.

(1) LIVE ANIMALS included 31,186 head of cattle, 80,844 sheep, and 1,190 horses.

(2) Of PRIMARY MATERIALS the largest item consisted of "*Coal, stones, and earths*" (including 1,736,213 tons of coal, mainly from Great Britain; cement, 268,689 tons, from Germany and Great Britain; coal briquets, coke, asphalt, marble, and nitrate of soda), the total value being 63,826,094 milr. Next came jute and hemp (half as yarn, half raw), 12,406,049 milr. Pelts and skins (practically all tanned and prepared) valued at 11,648,504 milr. Cotton (about two-thirds sewing thread, and the rest raw and carded cotton) was valued at 10,164,997 milr. Among other items, in descending order, were: Material for perfumery, painting, and dyeing; woods (chiefly pine from the U.S.A.); steel and iron; vegetable extracts and oils; seeds, roots, barks (chiefly malted barley, leaf tobacco, and hops); and wool.

(3) Of MANUFACTURES, the largest items were: *Engines, machinery, tools, and hardware*, value 86,898,467 milr. (mainly from U.S.A., Great Britain, and Germany); *articles of steel and iron*, value 81,424,363 milr.; *cotton* (the bleached, unbleached, printed, and dyed goods, practically all from Great Britain), value 76,707,949 milr.; *chemicals and drugs* (including mineral waters), value 18,485,084; *carriages and vehicles* (railway cars, motors, etc.), value 18,080,984 milr.; *paper goods* (plain and printed), 17,525,868 milr.; *earthenware, porcelain, and glass*, value 14,009,235 milr.; *woollen goods*, value 12,431,905; *copper and alloys*, value 8,220,933; *linen goods*, value 7,984,700 milr.; and *guns and ammunition*, value 7,040,731 milr.

(4) ALIMENTARY PRODUCTS are subdivided into food products and cattle food. The largest items are : *Wheat* (from Argentina), value 36,053,110 milr. ; *wines*, value 35,143,734 milr. ; *wheat flour* (58 per cent. from Argentina, 34 per cent. from U.S.A.), value 29,966,336 milr. ; *cod-fish* (mainly from Newfoundland and Norway), value 17,575,527 milr. ; *jerked beef*, value 14,400,531 milr. Of smaller, but still considerable values, were olive oil, butter, preserved fish, preserved milk, rice, potatoes, beer and spirits, cheese, and beans.

The chief cattle food imported was alfalfa (or lucerne), value 2,376,609 milr.

III.—COUNTRIES OF ORIGIN

The relative position of the chief countries from which imports come into Brazil remains unchanged from year to year. In 1911 the following countries sent imports of the value given—

				Milreis, paper.
Great Britain	..	..	..	230,541 : 951
Germany	..	..	..	133,274 : 169
United States	..	..	..	106,798 : 633
France	..	..	..	70,200 : 120
Argentina	..	..	..	60,476 : 810
Portugal	..	..	..	42,692 : 594
Belgium	..	..	..	33,104 : 014
Italy	..	..	..	28,957 : 116
Uruguay	..	..	..	16,705 : 499
Austria-Hungary	..	..	..	11,658 : 826
Switzerland	..	..	..	10,665 : 305
India	..	..	..	9,215 : 902
Newfoundland	..	..	..	8,669 : 224
Spain	..	..	..	7,334 : 088
Norway	..	..	..	6,735 : 773
Netherlands	..	..	..	5,094 : 915
Sweden	..	..	..	3,202 : 190
Canada	..	..	..	3,133 : 230

Other countries sent less than 1,000,000 milr.

IV.—EXPORTS ANALYSED

The total exports for 1911 were 1,040,346 : 060\$ (paper) = £69,244,982, of which—

91.2 %	were of a vegetable nature
4 %	„ animals or animal products
3.5 %	„ specie or foreign bank notes, and
1.3 %	„ minerals

Deducting the specie, the exports of merchandise alone totalled 1,003,924 : 736\$ (paper), *i.e.*, £66,838,892.

In order of value the exports rank as follows—

	Milreis, paper.
1. Coffee	606,530 : 824 (=£41,435,388)
2. Rubber	226,395 : 419 (=£15,093,028)
3. Maté	29,785 : 020
4. Hides	27,014 : 675
5. Cocoa	24,668 : 017
6. Cotton	14,704 : 146
7. Tobacco	14,535 : 017
8. Skins	9,729 : 956
9. Gold	7,022 : 964
10. Sugar	6,132 : 210
11. Carnauba wax	5,856 : 606
12. Bran	5,498 : 124
13. Brazil nuts	3,984 : 733
14. Manganese	3,875 : 312
15. Cotton seed	2,712 : 512
16. Bananas	2,110 : 948
17. Monazitic sand	1,666 : 559
18. Timber	1,274 : 702
19. Precious stones	979 : 436
20. Wool	934 : 158
21. Flour	829 : 696
22. Tongues	709 : 759
23. Piassava	571 : 103
24. Horsehair	451 : 458
25. Cotton waste	447 : 742
26. Horses	422 : 853
27. Glycerine	401 : 763
28. Beeswax	347 : 681
29. Rice	342 : 259
30. Lard	301 : 715
31. Ipecacuanha	227 : 015



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A Shipment of Rubber at Abuna

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Other articles were under the last-named value (*i.e.*, under £15,000).

The rubber was almost all “seringa”; of the other classes, “maniçoba” was the largest, “mangabeira” next, while “sorva” was exported in very small quantity. Cotton increased considerably in 1912 and 1913, while cocoa decreased, falling below tobacco. The skins were mainly of goats; the sugar chiefly Demerara and Cassonade; the flour almost entirely made from manioc.

DESTINATION

35.6%	of the exports were sent to	United States
15 %	“ “ “	Great Britain
14.5%	“ “ “	Germany
8.1%	“ “ “	Holland
7.9%	“ “ “	France
5.1%	“ “ “	Austria-Hungary
3.9%	“ “ “	Argentina
2.3%	“ “ “	Belgium
1.3%	“ “ “	Uruguay
1.1%	“ “ “	Italy
0.9%	“ “ “	Sweden

The coffee export was as follows—

					Bags.
United States	..	..	..	..	4,444,973
Germany	..	..	..	..	1,603,991
Netherlands	..	..	..	..	1,413,412
Austria-Hungary	..	..	..	..	967,677
France	..	..	..	..	874,928
Great Britain	..	..	..	..	270,114
Argentina	..	..	..	..	225,187
Italy	..	..	..	..	204,933
Other countries	..	..	..	..	1,052,587
Total	..	..	..	..	11,257,802

Of the rubber export (36,547 metric tons) about 45 per cent. went to the United States of America, another 45 per

cent. to Great Britain, and most of the remainder to France.

Of the cotton export (14,647 tons), Great Britain took 10,103 tons, Portugal 2,754, Germany 531, and Spain 474.

Of the sugar export (36,208 tons), Great Britain took 23,305 tons and the United States of America, 12,260.

Of Brazil nuts, 105,423 hectolitres went to the United States of America, 23,641 to Great Britain, and 9,013 to Germany.

Of tobacco (18,489 tons), Germany took 15,779 tons ; Argentina, 2,073 ; and Holland, 265.

Cocoa was divided among Germany, United States of America, Great Britain, France, and Holland.

Of maté (61,834 tons), Argentina took 46,500 tons ; Uruguay, 12,156 ; and Chile, 3,057.

EXPORTS BY STATE OF ORIGIN

	Through Port of :	Milr. paper.	Milr. paper.	%
<i>Amazonas</i>	Manáos	119,351 : 659 }	120,503 : 649	11·988
	Itacoatiára	1,151 : 990 }		
<i>Pará</i>	Obidos	1,192 : 729 }	93,247 : 097	9·281
	Belém	92,054 : 318 }		
<i>Bahia</i>	S. Salvador	—	62,781 : 883	6·249
<i>Pernambuco</i>	Recife	—	19,445 : 822	1·937
<i>Ceará</i>	Fortaleza	—	11,511 : 436	1·146
<i>Maranhão</i>	S. Luiz	1,718 : 991 }	7,617 : 420	0·758
	Ilha de Cajueiro	5,898 : 429 }	7,617 : 420	0·758
<i>Parahyba</i>	Cabedello	—	4,037 : 350	0·402
<i>Rio Grande do Norte</i>	Natal	—	3,933 : 385	0·391
<i>Alagoas</i>	Maceió	—	3,621 : 139	·361
<i>Sergipe</i>	Aracajú	105 : 816 }	426 : 414	0·043
	Penedo	320 : 598 }	426 : 414	0·043
Total for North Brazil ..			327,125 : 595	32·556
				of the ex- port trade of whole country.

IMPORTS BY STATES

				Milreis paper.
1. Pernambuco (port of Recife)	..	..	..	53,952 : 804
2. Pará (port of Belém)	..	..	..	47,591 : 907
3. Bahia :				
Port of S. Salvador	..	..	40,529 : 882	40,785 : 090
,, Ilhéos	..	..	225 : 208	
4. Amazonas :				
Port of Manáos	..	..	27,108 : 154	27,038 : 949
,, Itacoatiára	..	..	1,930 : 795	
5. Ceará :				
Port of Fortaleza	..	..	13,198 : 526	13,352 : 817
,, Camocim	..	..	154 : 291	
6. Maranhão (port of S. Luiz)	..	..	..	9,548 : 099
7. Alagoas :				
Port of Maceió..	..	..	7,592 : 973	7,645 : 340
,, Penedo	..	..	52 : 367	
8. Parahyba (port of Cabedello)	..	..	..	5,252 : 121
9. Rio Grande do Norte (port of Natal)	..	..	..	2,640 : 361
10. Sergipe (port of Aracajú)	..	..	..	2,368 : 439
11. Piauí (port of Parnahyba)	..	..	..	1,783 : 945

CHAPTER XVII

LIST OF TOWNS IN NORTH BRAZIL

U = Urban population

D = District population

A

ABAETÉ, in state of Pará, on R. Abaeté, near bay of Marajó ; pop. 7,000 (U.) and 3,000 (D.). Commercial centre, exporting timber, mandioca flour, rubber, coffee, cereals, and alcohol.

ACARY, in state of Rio Grande do Norte, on R. Piquy ; lat. 6° 27' S. ; pop. 8,000 (D.). Exports maniçoba rubber, cotton, cheese, and hides.

AGUA BRANCA, or **CAPIÁ**, in State of Alagôas ; lat. 9° 14' S. ; pop. 12,000 (D.). Not far from the Piranhas-Jatobá Railway. Produces cotton, coffee, sugar, and maize.

AGUA PRETA, in state of Pernambuco, on R. Una ; lat. 8° 45' S. ; pop. 27,000 (D.). Communicates by G.W. Railway with Recife (137 k.). Produces cotton, sugar, cocoa, and cereals.

ALAGÔA NOVA, in state of Parahyba, on R. Gurinhem ; lat. 7° 9' S. ; pop. 19,000 (D.). Produces cotton, coffee, sugar, tobacco, and cereals.

ALAGÔAS, in state of Alagôas, on R. Utinga, 10 k. from the mouth ; lat. 9° 45' S. ; pop. 18,000 (D.). Produces cotton, sugar, and cereals.

ALCÁNTARA, in state of Maranhão, seaport on Bay of S. Marcos ; lat. 2° 31' S. ; pop. 16,000 (D.). A decaying port, exporting mainly cattle, hides, rubber, and gums.

ALEMQUER, in state of Pará, at confluence of the rivers Igarapé, Itacaraca, and Surubiú ; lat. 1° 57' S. ; pop. 17,500 (D.). Exports Brazil nuts, rubber, cocoa, and cattle.

ALTINHO, in state of Pernambuco, on R. Una ; lat. $8^{\circ} 27'$ S. ; pop. 24,000 (D.). Produces sugar, coffee, cotton, maize, and cereals.

AMARANTE, in state of Piauh, on R. Parnahyba ; lat. $6^{\circ} 19'$ S. ; pop. 10,000 (D.). Produces cotton, maniçoba rubber, and timber.

AMARGOSA, in the state of Bahia, on R. Jequerica-mirim ; lat. $13^{\circ} 4'$ S. ; pop. 21,000 (D.). Communicates by tram-line with Nazareth (99 k.). Products : coffee, tobacco, mandioca, and cattle.

ANADIA, in state of Alagôas, on R. de S. Miguel ; lat. $9^{\circ} 43'$ S. ; pop. 85,000. Centre of an agricultural district, producing abundantly cotton, coffee, sugar, and fresh food stuffs.

ANGICOS, in state of Rio Grande do Norte, on R. Pata Choca, lat. $5^{\circ} 37'$ S. ; pop. 6,500 (D.). Produces cattle, hides, and carnauba wax.

APODY, in state of Rio Grande do Norte, on R. Apody ; lat. $5^{\circ} 56'$ S. ; pop. 3,000 (U.) and 10,500 (D.). Sugar, cotton, tobacco, and vegetables are grown, and the exports also include carnauba wax, cattle, hides, isinglass, and cheese.

AQUIDAUANA, in state of Matto Grosso, on river of same name ; lat. $20^{\circ} 40'$ S. ; pop. 4,000 (D.). Chief products, maté, gold, and cattle.

ARACAJÚ, cap. of state of Sergipe ; seaport at mouth of R. Cotinguiba ; lat. $10^{\circ} 57'$ S. ; pop. 30,000 (U.). Communicates mainly by sea ; inland by the Laranjeiras Railway. Contains Government buildings, church, theatre, library, hospital. Manufactures cotton, sugar, soap, leather, cigars, and exports sugar, rum, cotton, hides, coffee, cocoa, and salt. Hotel: *Brazil*.

ARACATY, in state of Ceará, seaport near mouth of R. Jaguaribe ; lat. $4^{\circ} 32'$ S. ; pop. 9,000 (U.) and 33,000 (D.). Entrance difficult owing to shifting sand-bar. Exports cotton, hides, sugar, and carnauba wax. Port of call for Brazilian Lloyd Co.

AREIA, or **BREJO D'AREIA**, in state of Parahyba ; lat. 7° 10' S. ; pop. 8,000 (U.) and 30,000 (D.). Produces sugar, cotton, coffee, and cattle.

ARUMÁ, in state of Amazonas, the name of two places on the R. Purus, at which steamers call. One is 372 k. and the other 748 k. by river from Manáos.

ASSU, in state of Rio Grande do Norte, on R. Piranhas ; lat. 5° 32' S. ; pop. 5,000 (U.) and 15,000 (D.). Produces cotton, salt, cereals, and carnauba wax. Iron, copper, lead, and coal are found in the district.

ATALAYA, in state of Alagoas, on R. Parahyba ; lat. 9° 25' S. ; pop. 8,000 (U.) and 50,000 (D.). Communicates by Central Railway of Alagoas with Maceió (40 k.). Produces sugar.

B

BAHIA, cap. of the state of Bahia, and formerly cap. of Brazil ; on the bay of All Saints ; lat. 12° 58' S. ; pop. 300,000 (U.). The city has two distinct parts ; the lower town on the bay, contains the railway stations, markets, customs house, post-office, and business premises ; the upper town stands 200 ft. higher, and contains the government and municipal buildings, cathedrals, many churches, library, museum, theatres, schools and hotels. Two electric elevators and many flights of steps connect the two parts. The city is well provided with electric trams, lighting, and power, and with water and sanitary arrangements. It is a great centre of the cocoa and tobacco trade, and the manufactures include tobacco, cotton, leather, with breweries, distilleries, and sugar refineries. The cost of living is high.

There is a British bank, and British and American Consuls are established here. Hotels : *Paris, Sul Americano*, and *Bergmann*.

BANANEIRAS, in state of Parahyba, on R. Camaratiba ; pop. 27,000 (D.). Will be a station on the extension of the G. W. Railway from Guarabira to Piahy. Produces coffee, cotton, sugar, and tobacco. Granite and chalk are found in the district.

BARCELLOS, in state of Amazonas, on Rio Negro ; lat. $0^{\circ} 33' N.$; 428 k. by river from Manáos ; pop. 9,000 (D.). Port of call for river steamers ; produces rubber and cereals.

BARRA DO CORDA, in state of Maranhão, on R. Mearim ; lat. $5^{\circ} 37' S.$; pop. 14,000 (D.). Exports cereals and rubber, together with cattle, hides, and leather.

BARRA DO RIO GRANDE, in state of Bahia, at the confluence of the rivers S. Francisco and Grande ; lat. $11^{\circ} 5' S.$ Important as the centre of the river trade from states of Minas, Goyaz, and Piahy. The district is fertile and produces good wines.

BARRAS, in state of Piahy, on R. Longa ; lat. $4^{\circ} 8' S.$; pop. 19,000 (D.). Produces cotton, sugar, rice, mandioca, cattle, and hides.

BARREIRAS, in state of Bahia, on Rio Grande ; lat. $11^{\circ} 54' S.$; pop. 5,000 (U.) and 30,000 (D.). Produces cattle, mangabeira rubber, and timber.

BARREIRINHA, in state of Amazonas, on the Furo de Ramas ; lat. $2^{\circ} 25' N.$; pop. 8,000 (D.). Produces rubber, cereals, and dried fish.

BARREIRINHAS, in state of Maranhão, on R. Pregiaca ; lat. $2^{\circ} 52' S.$; pop. 2,000 (U.) and 12,000 (D.). Produces cereals, rice, and beans ; also forest products, *e.g.*, mangabeira rubber, carnauba wax, and gums.

BARREIROS, in state of Pernambuco, on R. Una ; lat. $8^{\circ} 48' S.$; pop. 6,000 (U.) and 16,000 (D.). Produces coffee, sugar, mandioca, and cereals.

BATURITÉ, in state of Ceará ; lat. $4^{\circ} 20' S.$; pop. 30,000 (U.) and 45,000 (D.). Communicates by railway with Fortaleza (101 k.). Produces maniçoba rubber, coffee, and sugar.

BELÉM DO PARÁ, cap. of the state of Pará, on R. Guajará or Pará ; lat. $1^{\circ} 27' S.$; pop. 200,000. Communicates by railway with Bragança (316 U.), by the Amazon with Manáos and Iquitos up stream, and with the Atlantic down stream.

The most important town in North Brazil, with imports and exports valued at nearly £10,000,000 per annum. Contains government buildings, town hall, cathedral, Goeldi Museum, theatre. Belém's leading feature is the exportation of rubber ; other industries include biscuits, soap, candles, preserved meat, fur, pottery. There is a considerable foreign population, and British and American Consuls are established here. Hotels : *Paz*, *America*, and *Pinnet*.

BELLA VISTA, in state of Goyaz ; lat. 16° 22' S. ; pop. 9,000 (D.). Produces sugar, cotton, tobacco, and cattle. Diamonds are found in the district.

BELMONTE, in state of Bahia, on R. Jequitinhonha ; lat. 15° 51' S. ; pop. 6,000 (U.) and 14,000 (D.). Communicates by canal of Peso with Cannavieiras. Produces cocoa, coffee, sugar, timber, piassava fibre, and cattle.

BOA VISTA (1), in state of Amazonas, the name of two places on the R. Purus, one 75 k. and the other 371 k. by river from Manáos. Ports of call for river steamers. There are also a third place of this name in the state, on the R. Madeira, 326 k. from Manáos, and a fourth on the Rio Branco ; lat. 4° 38' N. The last has large herds of cattle, and produces tobacco, sugar, maize, and cereals.

BOA VISTA (2), in state of Goyaz, on R. Tocantins, opposite Porto Franco ; pop. 24,000 (D.). Centre of an agricultural district, producing sugar, tobacco, and cattle.

BOM FIM (1), in state of Bahia ; lat. 10° 27' S. ; 1,785 ft. above sea-level ; pop. 10,000 (U.) and 26,000 (D.). Communicates by S. Francisco Railway with Bahia (445 k.) and Joazeiro. Produces coffee, sugar, manioca, tobacco, rice, rubber, and cotton ; copper, iron, and manganese are found in the district. Hotel : *Lobo*.

BOM FIM (2), or **RIO CLARO**, in state of Goyaz ; lat. 16° 45' S. ; situated on a high plateau, 2,740 ft. above sea-level, a little west of the R. Corumbá. Chief industries : cattle grazing, and the growing of sugar and tobacco.

BOM JARDIM, in state of Pernambuco, on R. Tracunhaem ;

lat. 70° 45' S. ; pop. 40,000 (D.). Communicates by station of Limoeiro (20 k.) on the G.W. Railway with Recife (100 k.). Produces sugar, coffee, rice, maize, and tapioca.

BOM JESUS DA GURGUEIA, in state of Piauí, on R. Gurgueia ; lat. 8° 30' S. ; pop. 10,000 (D.). Produces rubber, rice, mandioca, sugar, maize, and potatoes.

BONITO, in state of Pernambuco, lat. 8° 33' S. ; pop. 30,000 (D.). Communicates by G.W. Railway with Recife (112 k.). Chief products : coffee, rice, and maniçoba rubber.

BORBA, in state of Amazonas, on R. Madeira ; lat. 4° 13' S. ; 185 k. by river from Manáos. Produces rubber and cereals.

BRAGANÇA, in state of Pará, on river Dois Igarapés ; lat. 1° 5' S. ; pop. 5,000 (U.) and 30,000 (D.). Terminus of railway to Belém (230 k.). Produces cotton, sugar, rice, maize, and tobacco.

BREJO, in state of Maranhão ; lat. 3° 42' S. ; pop. 4,000 (U.) and 12,000 (D.) ; 8 kil. from river Parahyba, by which it communicates with the coast. Cotton and cereals are grown, and many forest products are exported, *e.g.*, carnauba wax, mangobeira and maniçoba rubber, gums, copaiba oil, and timber. Limestone, rock crystal, and iron are found in the district.

BREJO DO MADRE DE DIOS, in state of Pernambuco ; pop. 35,000 (D.). Communicates by station of Antonio Olyntho (30 k.) on the Central Railway with Recife (200 k.). Centre of a flourishing agricultural district, producing sugar, coffee, cotton, and cereals.

BREVES, in state of Pará, 1° 4' S. ; pop. 27,000 (D.). On the Paranon Furo (canal). Exports rubber.

C

CABO, in state of Pernambuco on R. Pirapama ; lat. 8° 16' S. ; pop. 5,000 (U.) and 26,000 (D.). Communicates by G.W. Railway with Recife (31 k.). Chief products : rice, coffee, cotton, sugar, maize, and beans.

CABROBO, in state of Pernambuco, on R. São Francisco ; lat. $8^{\circ} 33' S.$; pop. 19,000 (D.). Produces coffee, cotton, sugar, and cereals. Communicates by river up and down stream.

CACHOEIRA, in state of Bahia, on R. Paraguassú ; lat. $12^{\circ} 46' S.$; pop. 30,000 (U.) and 55,000 (D.). Communicates by Central Railway of Bahia with Feira de Sant' Anna (45 k.) and Bahia (78 k.). A well-found city, with tobacco, meat-preserving, and soap factories, and distilleries ; exports mandioca flour, sugar, and tobacco. Hotel : *Juvenal*.

CAICO, in state of Rio Grande do Norte, on R. Serido ; lat. $6^{\circ} 24' S.$; pop. 4,000 (U.) and 14,000 (D.). Centre of a great grazing district ; produces also cotton, maize, rice, and carnauba wax. It is proposed to extend the G.W. Railway to this place.

CAJAZEIRAS, in state of Parahyba, on W. boundary ; lat. $7^{\circ} 2' S.$; pop. 10,000 (D.). Produces cotton, sugar, tobacco, and cereals.

CAMAMU, in state of Bahia, near the coast ; lat. $14^{\circ} S.$; pop. 24,000 (D.). Chief product : coffee.

CAMARAGIBE, in state of Alagôas, on R. Camaragibe ; lat. $9^{\circ} 12' S.$; pop. 30,000 (D.). Produces sugar, cotton, mandioca, etc. ; coal and silver is found in the neighbourhood.

CAMETÁ, in state of Pará, on left bank of R. Tocantins, 150 k. S.W. of Belém ; lat. $2^{\circ} 14' S.$; pop. 20,000 (U.) and 32,000 (D.). River port, and centre of cocoa district. Well-built town, with large exports of cocoa, rubber, and mandioca flour.

CAMOCIM, in state of Ceará, seaport in lat. $3^{\circ} 12' S.$; pop. 12,000 (U.). Communicates by Sobral Railway with Ipú (216 k.) and by water with Recife, Pará, and Manáos. Produces cotton, carnauba wax, and cattle.

CAMPINA GRANDE, in state of Parahyba ; lat. $7^{\circ} 15' S.$; pop. 8,000 (U.) and 49,000 (D.). Communicates by G.W. Railway with Itabaiana, and thence with Parahyba and

Recife (224 k.). Centre of a flourishing cotton-growing district.

CAMPO MAJOR, in state of Piauh, on R. Sorabim ; lat. $4^{\circ} 47' S.$; pop. 2,500 (U.) and 17,000 (D.). Chief products : carnauba wax, copaiba oil, cotton, plumes, and cereals.

CANGUARETAMA, in state of Rio Grande do Norte ; lat. $6^{\circ} S.$; pop. 2,000. Communicates by G.W. Railway with Natal and Nova Cruz. Chief products : coffee, sugar, and Brazil wood.

CANHOTINHO, in state of Pernambuco ; lat. $8^{\circ} 49' S.$; 2,180 ft. above sea-level ; pop. 40,000 (D.). Communicates by G.W. Railway with Recife (235 k.). Produces sugar, coffee, maize, and beans.

CANNAVIEIRAS, in state of Bahia, seaport at mouth of R. Pardo ; lat. $15^{\circ} 41' S.$; pop. 20,000 (D.). Port of call for coasting vessels. Produces cocoa, coffee, mandioca, and piassava fibre. Iron, mica, and diamonds are found in the district.

CANUTAMA, in state of Amazonas, on R. Purus, 1,112 k. by river from Manáos ; lat. $6^{\circ} 18' S.$; pop. 3,000 (D.). Produces rubber and cereals.

CAPELLA, in state of Sergipe, on R. Japarutuba ; lat. $10^{\circ} 29' S.$; pop. 14,000 (D.). Produces sugar, cotton, mandioca, and cereals.

CARAVELLAS, in state of Bahia, seaport at mouth of R. Caravellas ; lat. $17^{\circ} 46' S.$; pop. 1,000 (U.) and 8,000 (D.). Communicates by sea with Bahia, and by the Bahia-Minas Railway with Theophilo Ottoni (142 k.). Centre of Brazilian whale fishery. Exports whale oil ; also coffee, mandioca flour, and timber. Hotel : *Argentina*.

CAROLINA, in state of Maranhão, on R. Tocantins ; lat. $7^{\circ} 21' S.$; pop. 12,000 (D.). Produces cattle and cereals.

CARUARU, in state of Pernambuco, on R. Ipojuca ; lat. $8^{\circ} 13' S.$; 1,040 ft. above sea-level ; pop. 42,000 (D.). Communicates by G.W. Railway with Recife, 139 k. Produces cotton, coffee, sugar, and maize.

CATALÃO, in state of Goyaz ; lat. $18^{\circ} 5' S.$; pop. 8,000 (U.) and 40,000 (D.). Communicates by Mogyana Railway with Uberaba (Minas Geraes), S. Paulo, and Santos. Exports rice, cattle, bacon, sugar, and coffee. Diamonds are found in district. Hotel : *Barbosa*.

CAXIAS, in state of Maranhão, lat. $4^{\circ} 51' S.$; at head of navigation of R. Itapicuru ; pop. 20,000 (U.) and 42,000 (D.). The second largest city in the state ; industries include pottery, cotton, distilling, and sugar-refining ; exports sugar, cotton, tobacco, carnauba wax, maniçoba rubber, and cereals.

CEARÁ MIRIM, in state of Rio Grande do Norte ; lat. $5^{\circ} 35' S.$; pop. 13,700 (D.). On branch of G.W. Railway from Natal (28 k.) to Taipú. Produces sugar, coffee, maize, rice, brandy.

CHAVES, in state of Pará, on N. coast of the island of Marajó ; lat. $0^{\circ} 10' S.$; pop. 14,000 (D.). Exports rubber and cattle.

COARY, in state of Amazonas, on the R. Solimões or Upper Amazon ; lat. $4^{\circ} 24' S.$; 382 k. from Manáos ; pop. 14,000 (D.). Port of call for river steamers. Produces rubber, sugar mandioca, and rice.

There is another Coary on the R. Purus, 524 k. by river from Manáos.

CODAJAZ, in state of Amazonas. (1) On the Solimões or Upper Amazon ; lat. $2^{\circ} 59' S.$; 248 k. by river from Manáos. Produces rubber, sugar, mandioca, Brazil nuts, and dried fish ; also cattle. Copper and iron is found in the district. (2) On R. Juruá, 265 k. by river from Manáos. Both are ports of call for river steamers.

CODO, in state of Maranhão, on R. Itapicuru ; lat. $4^{\circ} 33' S.$; pop. 5,000 (U.) and 20,000 (D.). Manufactures cotton and exports cotton, tobacco, cereals, and hides.

CONCEIÇÃO, in state of Parahyba, on R. Pianco ; lat. $7^{\circ} 32' S.$; pop. 6,000 (D.). Produces cotton, sugar, cattle, cereals, and hides.

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COXIM, in state of Matto Grosso, on R. Taquary ; lat. $18^{\circ} 48' S.$; pop. 3,000 (D.). Exports timber, mangabeira rubber, cattle, and hides.

CRATO, in state of Ceará ; lat. $7^{\circ} 14' S.$; on R. Batateira, near boundary of Pernambuco ; pop. 6,000 (U.), and 20,000 (D.). Terminus of railway being built from Senador Pompeii. Centre of a fertile district, producing cereals, cotton, coffee, sugar, tobacco ; also cattle and carnauba wax.

CRUZEIRO DO SUL, in the territory of Acre, on R. Juruá ; lat. $7^{\circ} 46' S.$; pop. 1,300 (U.) and 15,000 (D.) ; cap. of dep. of Alto Juruá. Exports rubber, gums, and medicinal plants.

CURRAES NOVOS, in state of Rio Grande do Norte, on R. Piquy ; lat. $6^{\circ} 9' S.$; pop. 9,000. Known for its great cattle fairs ; produces cattle, hides, and skins, and carnauba wax.

CURRALINHO (1), in state of Goyaz, on R. das Pedras ; lat. $16^{\circ} 26' S.$; pop. 8,000 (D.). Produces timber, rubber, and other forest products.

CURRALINHO (2), in state of Pará, on R. Pará ; lat. $1^{\circ} 48' S.$; pop. 10,000 (D.). Cattle-breeding district, with exports of rubber.

CURUCA, in state of Pará, on R. Curuçá-miry ; lat. $0^{\circ} 43' S.$; pop. 14,000 (D.). Exports rice, cereals, mandioca flour, canary seed, and salt fish.

CUYABA, cap. of state of Matto Grosso, on R. Cuyaba ; lat. $15^{\circ} 35' S.$; 950 ft. above sea-level ; pop. 32,000 (U.). Mainly an old town of one-storeyed houses, but with a few fine buildings, *e.g.*, the Governor's Palace, the cathedral, treasury, arsenal, and hospital. Has electric light, trams, water-supply. Is at present without railway facilities, but will ultimately be a station on the Mogyana Railway. There is a British Vice-consul. Gold and diamonds are found, and cattle are extensively bred in the district.

D

DIAMANTINO, in state of Matto Grosso ; lat. $14^{\circ} 21' S.$;

1,820 ft. above sea-level; pop. 3,500. Produces gold, diamonds, rubber, and timber.

E

ESCADA, in state of Pernambuco, on R. Ipojuca; lat. $8^{\circ} 24' S.$; pop. 17,000 (D.). Communicates by G.W. Railway with Recife (58 k.). Produces sugar, coffee, cotton, maize, beans, and mandioca.

ESTANCIA, in state of Sergipe, on R. Piahy; lat. $11^{\circ} 12' S.$; pop. 23,000 (D.). Produces cotton, sugar, mandioca, and maize; sugar, soap, oils, and tiles are manufactured.

F

FEIRA DE SANTA ANNA, in state of Bahia; lat. $12^{\circ} 16' S.$; pop. 32,000 (U.) and 77,000 (D.). Communicates by Central Railway of Bahia with Cachoeira (45 k.). Handsome, modern city, ranking as second in the state. The district produces tobacco, cereals, fruit and vegetables; diamonds, gold, iron, silver, and copper occur; also white marble quarries. The industries include tobacco and cigar-making. The town is well known for its great cattle fairs.

FLORES, in state of Maranhão, on R. Parnahyba; lat. $5^{\circ} 12' S.$; pop. 9,000 (D.). Communicates by railway with Caxias (78 k.). Produces sugar, cotton, cereals, and rubber.

FLORESTA, in state of Pernambuco, on R. Pajeu; lat. $8^{\circ} 42' S.$; 785 ft. above sea-level; pop. 16,000 (D.). Produces cotton, coffee, sugar, tobacco, and cereals.

FLORIANO, in state of Piahy, on R. Parnahyba; lat. $6^{\circ} 49' S.$; pop. 9,000 (D.). Produces cereals, cotton, and maniçoba rubber.

FLORIANO PEIXOTO, in state of Amazonas, on R. Purus; lat. $8^{\circ} 32' S.$; pop. 3,000 (D.). Produces rubber and cereals.

FONTE BOA, in state of Amazonas. (1) On R. Solimões or Upper Amazon; lat. $2^{\circ} 15' S.$; 778 k. by river from Manáos; pop. 11,000 (D.). Produces rubber and cereals. (2) On R. Juruá, 908 k. by river from Manáos. Both are ports of call for river steamers.

FORMOSA, in state of Goyaz, on R. Capunpuba; lat. 16° S.; pop. 2,000 (U.) and 14,000 (D.). Stands 2,950 ft. above sea-level. Valuable gold mines are worked, and coffee, cotton, sugar, tobacco, rice, mandioca, maize, and cattle are produced.

FORTALEZA, cap. and chief port of state of Ceará, at mouth of R. Ceará; lat. 3° 43' S.; pop. 65,000 (U.). Communicates by the Baturité Railway with Miguel Calmon (335 k.). Port of call for all the leading steamship lines. A well paved and lit city, with cathedral, customs house, and government buildings. Exports live cattle, hides, cotton, sugar, manioca flour, carnauba wax, and maniçoba rubber. Hotels: *France* and *International*.

G

GAMELLEIRA, in state of Pernambuco, on R. Serinhaen; lat. 8° 34' S.; pop. 11,000 (D.). Communicates by G.W. Railway with Recife (94 k.). Produces cotton, coffee, sugar, rice, and cereals.

GARANHUNS, in state of Pernambuco, on R. Mindahu; lat. 8° 57' S.; 2,750 ft. above sea-level; pop. 40,000 (D.). Communicates by G.W. Railway with Recife (270 k.). Produces cotton, coffee, sugar, rice, and tobacco; manufactures leather.

GLORIA DE GOITA, in state of Pernambuco, on R. Goita; lat. 8° 2' S.; pop. 37,000. Produces coffee, cotton, sugar, and cereals.

GOYANA, in state of Pernambuco, on R. Goyana; lat. 7° 33' S.; pop. 42,000 (D.). Exports coffee and tobacco.

GOYAZ, cap. of the state of Goyaz, on R. Vermelho; lat. 16° 30' S.; pop. 15,000 (U.). No railway communication as yet, though a line is being built from Catalão. Possesses government buildings, academy of law, and fine church, but the town is ill paved, and the seat of government is likely to be removed to Leopoldina. Gold and precious stones are found in the district, and coffee, tobacco, sugar, cotton, and vanilla are grown. Hides and skins are also exported.

GRAJAHU, in state of Maranhão, on R. Grajahu ; lat. $5^{\circ} 59' S.$; pop. 4,000 (U.) and 16,000 (D.). Copper and iron are found in the district.

GRANJA, in state of Ceará, on R. Coreahu ; lat. $5^{\circ} 4' S.$; pop. 12,000 (U.) and 18,000 (D.). Communicates by N.E. Railway with port of Camocim (25 k.). Has large salt works, and a tile manufactory. The district produces cotton, maize, tobacco, carnauba wax, and hides.

GUARABIRA, in state of Parahyba, on R. Aracagy ; lat. $6^{\circ} 50' S.$; pop. 7,000 (D.). Communicates by railway with Parahyba, 98 k. ; junction for the Bananeiras branch. Produces cotton, sugar, with oranges and other fruit.

H

HUMAYTA, or **HUMAITA**, in state of Amazonas, on R. Madeira ; lat. $6^{\circ} 42' S.$; 881 k. by river from Manáos ; pop. 12,000 (D.). Port of call for river steamers. Produces rubber, maize, rice, beans, etc.

IGUARASSU, in state of Pernambuco, on river of same name ; lat. $7^{\circ} 49' S.$; pop. 31,000. Communicates by G.W. Railway with Recife (30 k.). Produces cotton, sugar, tobacco, and cattle.

ILHÉOS, in state of Bahia, seaport at mouth of R. Almada ; lat. $14^{\circ} 51' S.$; pop. 16,000 (U.) and 60,000 (D.). A railway to Conquista is being built ; port of call for the coasting steamers of the Bahia Co. Produces cocoa, coffee, sugar, tobacco, and cereals ; coal, petroleum, naphtha, gold, and fine timber are found in the district.

INGAZEIRA, in state of Pernambuco, on R. Pajeru ; lat. $7^{\circ} 59' S.$; 1,810 ft. above sea-level ; pop. 11,000 (D.). Produces coffee, cotton, sugar, and mandioca.

IPOJUCA, in state of Pernambuco, on river of same name ; lat. $8^{\circ} 25' S.$; pop. 20,000 (D.). Produces sugar and tobacco.

ITABAIANA, in state of Sergipe ; lat. $10^{\circ} 42' S.$; 2,500 ft. above sea-level ; pop. 24,000 (D.). An old city which is the

centre of a large export trade, for it provides the distant sertão of Bahia with mandioca flour, sugar and salt. It also exports sugar and spirits through Timbo and Estancia. In the neighbourhood are bred a class of ponies which are greatly prized in the state.

ITÁCOATIÁRA, in state of Amazonas, on R. Amazon ; 144 k. downstream from Manáos ; lat. $2^{\circ} 43' S.$; pop. 13,000 (D.). Port of call for river steamers. Produces cocoa, rubber, tobacco, Brazil nuts, and fish.

ITAITUBA, in state of Pará, on R. Tapajós ; lat. $4^{\circ} 19' S.$; pop. 3,500 (U.) and 25,000 (D.). Produces cocoa, deer-skins, and forest products.

ITAMBE, in state of Pernambuco ; lat. $7^{\circ} 27' S.$; pop. 25,000 (D.). Communicates by G.W. Railway with Recife (122 k.). Produces cotton, sugar, and cereals.

ITAPICURU-MIRIM, in state of Maranhão, river port on R. Itapicuru ; lat. $3^{\circ} 21' S.$; pop. 11,000 (D.). Exports sugar, cotton, cereals, and rubber.

J

JABOATÃO, in state of Pernambuco, on R. Tapacora ; lat. $8^{\circ} 5' S.$; pop. 30,000 (D.). Communicates by G.W. Railway with Recife (17 k.). Produces cotton, coffee, sugar, tobacco, rice, and cereals.

JACOBINA, in state of Bahia, on river do Ouro ; lat. $11^{\circ} 22' S.$; pop. 36,000 (D.). A station on the extension of the Central Railway of Bahia from Bom Fim to Morro do Chapéu. Produces cotton, sugar, rice, tobacco, and maize ; has fruit-preserving factory ; considerable stocks of cattle ; gold and fine timber in the district.

JAICOS, in state of Piauhhy ; lat. $7^{\circ} 19' S.$; pop. 13,000 (D.). Produces cotton, sugar, cereals, carnauba wax, copaiba oil, and timber.

JARAGUA, in state of Goyaz, on R. das Almas ; lat. $16^{\circ} 10' S.$; pop. 1,200 (U.) and 22,000 (D.). Exports skins

and pelts, cattle, tobacco, sugar, rubber, rice, and cereals. Gold, copper, lead, and iron are found in the district.

JARDIM DE SERIDO, in state of Rio Grande do Norte, on R. Serido ; lat. $6^{\circ} 29'$ S. ; pop. 13,000 (D.). Produces cotton, sugar, mandioca, cattle, and hides.

JERUMENHA, in state of Piauhys, on R. Gurgueia ; lat. $7^{\circ} 6'$ S. ; pop. 8,600 (D.). Produces cotton, coffee, sugar, cereals, and forest products, *e.g.*, carnauba wax, maniçoba rubber, and medicinal plants.

JOAZEIRO, in state of Bahia, on R. São Francisco ; lat. $9^{\circ} 29'$ S. ; pop. 6,000 (U.) and 18,000 (D.). Prosperous river-port, also communicating by S. Francisco Railway with Alagoinhas (452 k.) and Bahia. Produces sugar, cotton, cocoa, mandioca, carnauba wax, maniçoba rubber ; salt and rock crystal are found in the district. Hotel : *Paris*.

L

LABREA, in state of Amazonas, on R. Purus, a little below the confluence with the Ituxy ; lat. $7^{\circ} 25'$ S.

LAGARTO, in state of Sergipe, on R. Machado ; lat. $10^{\circ} 54'$ S. ; pop. 12,000 (D.). Produces cotton, sugar, rice, tobacco, and cattle.

LARANJEIRAS, in state of Sergipe, on R. Cotinguiba ; lat. $10^{\circ} 48'$ S. ; pop. 15,000 (D.). Communicates by railway with Aracajú. Produces sugar, cotton, cereals, and carnauba wax. Hotel : *Telles*.

LENÇÕES, in state of Bahia, on R. Lenções ; lat. $12^{\circ} 28'$ S. ; pop. 7,000 (U.) and 32,000 (D.). Produces diamonds and other precious stones, gold, and rock crystal.

LIMOEIRO, in state of Pernambuco, on R. Capiberibe ; lat. $7^{\circ} 52'$ S. ; 770 ft. above sea-level ; pop. 30,000 (D.). Communicates by G.W. Railway with Recife (83 k.). Produces cotton, coffee, sugar, and rice.

LIVRAMENTO, in state of Matto Grosso ; lat. 16° S. ; pop. 11,000 (D.). On extension of Mogyana Railway to Goyaz and Cuyabá. Produces gold, diamonds, and mica.



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M

MACAHYBA, in state of Rio Grande do Norte, on R. Jundiahy ; lat. 5° 5' S. ; pop. 12,000 (D.). Produces cotton, sugar, and cereals.

MACAO, in state of Rio Grande do Norte. A small port on the right bank of the R. Assu ; lat. 5° 10' S. ; exports salt and fish.

MACAPÁ, in state of Pará, on R. Amazon ; lat. 0° 55' S. ; pop. 15,000 (D.). Fortified town on northern border of the state. Exports rubber ; gold is also found in the district.

MACEIÓ, cap. of state of Alagoas ; seaport in lat. 9° 39' S. ; pop. 40,000 (U.). Communicates by Central Railway of Alagoas with União and Viçosa. Modern city with electric light, tramways, good water, and sewerage. Its buildings include government offices, church, theatre, library, and colleges. British and American Consuls are established here. Exports sugar, cotton, cocoa, maize, beans, cattle, and skins. Hotels : *Commercial* and *Universal*.

MAMANGUAPE, in state of Parahyba, on river of same name ; lat. 6° 48' S. ; pop. 7,000 (U.) and 30,000 (D.). Produces sugar, mandioca, cereals, and rubber.

MANACAPURÚ, in state of Amazonas, on the Amazon, 91 k. from Manáos ; port of call for river steamers. Produces rubber, Brazil nuts, and other forest products.

MANÁOS, cap. of state of Amazonas, situated at the confluence of the Rio Negro with the Amazon ; lat. 3° 6' S. ; pop. 80,000. The city is well-planned and progressive, with good lighting, trams, water-supply, etc. It has fine squares and avenues, and among the public buildings of note are the Government offices, theatre, palace of justice, museum, market, and Institute of Arts. The river port is well found, and exports rubber in large quantities ; though cocoa, cotton, cereals, and tobacco grow well in the district, very little is as yet exported. British and American Consuls are stationed here. Hotels : *Cassina* and *Gran*.

MANICORÉ, in state of Amazonas, on R. Madeira, 469 k. by river from Manáos; lat. $4^{\circ} 57' S.$; pop. 17,000 (D.). Port of call for river steamers. Trading centre, exporting tobacco, mandioca flour, rubber, cocoa, skins, fish, and oil.

MARACAS, in state of Bahia, on R. Jequiriça, 3,250 ft. above sea-level; lat. $13^{\circ} 38' S.$; near Jequie; a point to which the Nazareth Railway is being extended. An important Italian colony is situated here, and in the district are fine forests and deposits of graphite, manganese, iron, lead, copper, and diamonds. Exports maniçoba rubber.

MARAGOGIPE, in state of Bahia, on R. Maragogipe, where it enters Lake Paraguassú; lat. $12^{\circ} 53' S.$; pop. 7,000 (U.) and 25,000 (D.). Industries include cigar and soap-making and distilling. The district produces tobacco, coffee, sugar, rice, cocoa, maize, arrowroot, and cereals.

MARAGOGY, in state of Alagoas, near mouth of R. Maragogy; lat. $9^{\circ} 3' S.$; pop. 29,000 (D.). Exports sugar, cocoa, and fruit.

MARANGUAPE, in state of Ceará, on R. Pirapora; lat. $3^{\circ} 57' S.$; pop. 18,000 (U.) and 27,000 (D.). Communicates by Baturité Railway with Fortaleza (27 k.). Produces cotton, bananas, and maniçoba rubber.

MAROIM, in state of Sergipe; a town of 3,000 inhabitants, on the bank of a small tributary of the Cotinguiba, 20 m. N. of Aracajú; lat. $10^{\circ} 45' S.$ Centre of a sugar-growing district, and exports sugar and alcohol.

MARTINS, in state of Rio Grande do Norte, on R. Umary; lat. $6^{\circ} 26' S.$; 2,600 ft. above sea-level; pop. 10,000 (D.). Produces cotton, coffee, sugar, tobacco, cattle, and hides.

MATTO GROSSO, or **VILLA BELLA**, in state of Matto Grosso, on R. Guaporé; lat. $15^{\circ} 12' S.$; pop. 4,000. Former cap. of the state; has decayed through want of good roads and of railways. Produces rubber, medicinal plants, and minerals.

MAUES, in state of Amazonas, on R. Maues; lat. $4^{\circ} 57' S.$;

pop. 17,000 (D.). Trading centre, exporting rubber, and cereals.

MAZAGÃO, in state of Pará, on Maracapucú, mouth of the Amazon ; lat. $0^{\circ} 9' S.$ Manufactures nets, and exports salt-fish, rubber, timber, Brazil nuts, and sarsaparilla.

MELGACO, in state of Pará, on the bay of Aricurú ; lat. $1^{\circ} 48' S.$; pop. 15,000 (D.). Exports rubber.

MINAS DO RIO DE CONTAS, in state of Bahia ; lat. $13^{\circ} 50' S.$ Has rich mines of gold, amethysts, iron, crystal, and alum ; the land in the district is very fertile and well suited for agriculture.

MIRANDA, in state of Matto Grosso, on river of same name ; lat. $20^{\circ} 21' S.$; pop. 5,500 (D.). Exports maté.

MOCAJUBA, in state of Pará, on R. Tocantins ; lat. $2^{\circ} 42' S.$; pop. 10,000 (D.). Exports rubber, cocoa, and cereals.

MONTE ALEGRE, in state of Pará, on R. Gurupatuba ; lat. $2^{\circ} S.$; pop. 14,000 (D.). Produces rubber, cereals, and canary seed.

MONTE ALTO, in state of Bahia ; lat. $14^{\circ} 12' S.$; 80 k. E. of the river Sao Francisco. Has a cattle-breeding industry, and cultivates cotton. Rubber is gathered in the neighbourhood.

MONTE SANTO, in state of Bahia, near R. Itapicurú ; lat. $10^{\circ} 32' S.$ In the district there is abundance of vegetable fibres, wood for cabinet making, and medicinal plants.

MORRINHOS, in state of Goyaz, on R. Meiaponte ; lat. $18^{\circ} S.$; pop. 20,000 (D.). Produces cattle, coffee, and cereals.

MORRO DO CHAPÉO, in state of Bahia, 3,270 ft. above sea-level ; lat. $11^{\circ} 20' S.$; pop. 26,000 (D.). Centre of a diamond-producing district. Hotel : *Bahia*.

MOSSORÓ, in state of Rio Grande do Norte, on R. Mossoró ; lat. $5^{\circ} 8' S.$; pop. 9,000 (U.) and 13,000 (D.). Produces great quantities of salt ; also cotton, maniçoba rubber, cereals, carnauba wax, cattle and hides. Hotel : *Todo*.

MOURA, in state of Amazonas, on R. Negro, 280 k. from Manáos ; lat. $0^{\circ} 56' S.$; pop. 6,000 (D.). Port of call for river steamers ; chief product, rubber.

MUANÁ, in state of Pará, on R. Muaná ; lat. $1^{\circ} 29' S.$; pop. 14,500 (D.). Exports rubber, cereals, cattle, and horses.

MURICY, in state of Alagoas, on R. Mundahu ; lat. $9^{\circ} 18' S.$; pop. 31,000 (D.). Communicates by Central Railway of Alagoas with Maceió (64 k.), and União (24 k.). Centre of agricultural district, producing sugar, cotton, and cereals.

NATAL, cap. of state of Rio Grande do Norte ; seaport at mouth of R. Potengy ; lat. $5^{\circ} 46' S.$; pop. 20,000 (U.). Communicates by G.W. Railway with Nova Cruz (121 k.) and with Recife. The chief buildings — Palace of Congress, hospital, Athenaeum, etc.—are in the modern suburb of Ribeira. Exports cotton, sugar, rubber, salt, carnauba wax, and hides. Hotel : *Colombo*.

NAZARETH, (1) in state of Bahia, at mouth of R. Jaguaripe ; lat. $13^{\circ} 4' S.$; pop. 10,000 (U.) and 30,000 (D.). Communicates by tramroad with Conquista (159 k.). The industries include sugar works and distilleries. The district produces tobacco, coffee, sugar, maize, mandioca, and timber. The well-known manganese deposits of *sopé* are in the neighbourhood. (2) In state of Pernambuco ; lat. $7^{\circ} 49' S.$; pop. 70,000 (D.). Communicates by E.W. Railway with Recife (68 k.). Produces cotton, sugar, and tobacco.

NOVA CRUZ, in state of Rio Grande do Norte ; lat. $6^{\circ} 23' S.$; pop. 8,000 (D.). Communicates by G.W. Railway with Natal, 120 k. Produces Brazil wood and other timber, with coffee and sugar.

O

OBIDOS, in state of Pará, at the head of tidal water in the Amazon, 959 k. from Belém ; lat. $1^{\circ} 54' S.$; pop. 30,000 (D.). Port of call for river steamers. The products include cocoa, rubber, and Brazil nuts, and the industries chocolate-making and fruit-preserving.

OEIRAS (1), in state of Pará, on R. Araticú ; lat. $1^{\circ} 59' S.$; pop. 6,000 (D.). Exports rubber.

OEIRAS (2), in state of Piauí, on R. Caninde ; lat. $7^{\circ} 5' S.$; pop. 20,000 (U.) and 31,000 (D.). Important trading centre, ranking as second city in the state. Holds large cattle fair. The products include cattle, hides, butter, cheese, rubber, carnauba wax, and medicinal plants.

OLINDA, in state of Pernambuco ; lat. $7^{\circ} 59' S.$; pop. 10,000 (U.) and 30,000 (D.). Communicates by railway with Recife (6 k.) and Beberibe (6·7 k.). Manufacturing centre, former cap. of the state. Has factories for tobacco and cotton, and also sugar refineries. Exports sugar, coffee, tobacco, and cotton.

OURICURY, in state of Pernambuco ; lat. $7^{\circ} 51' S.$; pop. 21,000 (D.). Produces cotton, sugar, mandioca, cereals, and maniçoba rubber. Iron, lead, rock crystal, and mica are found in the district.

P

PALMA, in state of Goyaz, on R. das Palmas ; lat. $12^{\circ} 48' S.$; pop. 3,000 (U.) and 12,000 (D.). Produces cattle, swine, hides, and rubber.

PALMARES, in state of Pernambuco, on R. Una ; lat. $8^{\circ} 39' S.$; pop. 31,000 (D.). Communicates by G.W. Railway with Recife (124 k.). Produces sugar, coffee, cereals, beans, and potatoes.

PALMEIRA DOS INDIOS, in state of Alagoas, on R. Cururipe ; lat. $9^{\circ} 25' S.$; pop. 5,000 (D.). At present without railway communication, but a projected line is intended to connect it with Maceió. Produces cotton ; also cattle and hides.

PAO D'ALHO, in state of Pernambuco, on R. Capiberibe ; lat. $7^{\circ} 55' S.$; pop. 6,000. Communicates by G.W. Railway with Recife (60 k.). Produces sugar, tobacco, cotton, and cereals.

PAO D'ASSUCAR, in state of Alagoas, on R. São

Francisco ; lat. $9^{\circ} 48' S.$; pop. 4,000 (U.). Communicates by road with Piranhas, and thence by Paulo Affonso Railway and river (up and down stream). Produces cotton, cereals, and cattle.

PIRACANJUBA, in state of Goyaz. A town of 6,000 inhabitants ; lat. $17^{\circ} 40' S.$; built on a picturesque eminence, and a place of some importance. The buildings are curious instances of the old colonial style of architecture modelled on the Portuguese taste of the period.

PARAHYBA, cap. of the state of Parahyba, on R. Parahyba, 19 k. from the mouth ; lat. $6^{\circ} 56' S.$; pop. 35,000 (D.). Communicates by G.W. Railway (formerly Conde d'Eu Railway) with Cabedello (18 k.) at mouth of the river, and inland with Independencia, Alagôa Grande, Pilar, and Recife. The old or upper city contains the clubs and cafés ; the lower city is the business quarter. The buildings include government offices, cathedral, and theatre. The city is backward in lighting, tramways, and sanitary arrangements. There is a British Consul here. Exports tobacco, sugar, cotton, fruit, and mangabeira rubber. Hotels : *Central* and *Allemão*.

PARINTINS, in state of Amazonas, on R. Madeira ; lat. $2^{\circ} 37' S.$; 397 k. by river from Manáos ; pop. 20,000 (D.). Port of call. Exports cocoa, rubber, Brazil nuts, copaiba oil, fish and hides ; has also a boat-building industry.

PARNAHYBA, in state of Piauihy, on R. Parnahyba ; lat. $2^{\circ} 59' S.$; pop. 15,000 (D.). About $8\frac{1}{2}$ m. from the port of Amarração. No railway communication. Hotel : *Miramar*.

PASTOS BONOS, in state of Maranhão, on R. Parnahyba ; lat. $6^{\circ} 49' S.$; pop. 10,000 (D.). Produces sugar, cotton, coffee, mandioca, cattle, and hides.

PATOS, in state of Parahyba, on R. Espinharas ; lat. $7^{\circ} 8' S.$; pop. 3,000 (U.) and 12,000 (D.). Produces cotton, cereals, and cattle.

PATÚ, in state of Rio Grande do Norte ; lat. $6^{\circ} 27' S.$; pop. 7,000 (D.). Produces cotton, cereals, rubber, and carnauba wax.

PAULO AFFONSO, in state of Alagôas, on R. das Cabuças ; lat. $9^{\circ} 13' S.$; pop. 18,000 (D.). Centre of a stock-breeding district ; also sugar, cotton, cereals, fruit and vegetables are grown.

PENEDO, in state of Alagôas, on R. São Francisco, 55 k. from the mouth ; lat. $10^{\circ} 16' S.$; pop. 18,000 (U.). Great trading centre for the S. Francisco river, ranking as second city in the State. Exports sugar, cotton, cereals, and pottery. Hotel : *Alagôana*.

PENNAPOLIS, in the territory of Acre, on R. Acre ; lat. $9^{\circ} 55' S.$; oppos. Rio Branco ; a rising town, of recent foundation.

PERNAMBUCO. See Recife.

PESQUEIRA, in state of Pernambuco, on R. Panema ; lat. $8^{\circ} 26' S.$; 2,240 ft. above sea-level ; pop. 16,000 (U.) and 32,000 (D.). Communicates by Central Railway with Recife (230 k.). Exports cotton, hides, cereals, and guava jelly (which is manufactured here in large quantities). Hotel : *Pernambuco*.

PETROLINA, in state of Pernambuco, on R. São Francisco ; lat. $9^{\circ} 24' S.$; pop. 11,000 (D.). Produces cotton, sugar, rice, cereals, and cattle.

PICOS, in state of Piauí, on R. Guaribas ; lat. $6^{\circ} 58' S.$; pop. 18,000 (D.). Produces cattle, hides, and skins, and dairy produce.

PILAR, in state of Alagôas, on R. Parahyba ; lat. $9^{\circ} 36' S.$; pop. 17,000 (D.). Centre of an agricultural district producing sugar, cotton, coffee, cocoa, mandioca, fruit, and vegetables.

PIRACURUCA, in state of Piauí ; lat. $3^{\circ} 57' S.$; pop. 11,000 (D.). Mainly a stock-rearing district, producing cattle, hides, and skins ; cotton, carnauba wax, and gum are also exported.

PIRANHAS, in state of Alagôas, river port on left bank of the S. Francisco river ; lat. $9^{\circ} 38' S.$; pop. 7,000. Communicates with Jatoba (116 k.), another river port, by the

Paulo Affonso Railway, which avoids the cataracts of Paulo Affonso. Produces cattle, cotton, and cereals.

POCONE, in state of Matto Grosso, on R. Cuyaba ; lat. $16^{\circ} 16' S.$; pop. 7,000 (D.). Produces cattle and hides ; gold is also found in the neighbourhood.

POMBAL, in state of Parahyba, on R. Pianco ; lat. $70^{\circ} S.$; pop. 15,000 (D.). Produces cotton, sugar, and cereals ; also cattle and hides.

PORTO CALVO, in state of Alagôas, on R. Manguaba, 20 k. from its mouth ; lat. $9^{\circ} 4' S.$; pop. 4,000 (U.). Produces sugar and cereals ; also good building timber.

PORTO DE MOZ, in state of Pará, on R. Xingu ; lat. $9^{\circ} 2' S.$; pop. 6,000 (D.). Produces rubber and cereals.

PORTO NACIONAL, in state of Goyaz, on R. Tocantins ; lat. $10^{\circ} 57' S.$; river port, with considerable trade. Exports rubber, tobacco, hides, dried beef, bird's plumes, and vegetables ; imports coffee, salt, and wheat. Medicinal plants abound in the forests, and diamonds, gold, rock crystal, and malachite are found.

POXIM, in state of Alagôas, near the mouth of the R. Poxim ; lat. $10^{\circ} 3' S.$; pop. 3,000 (U.) and 9,000 (D.). Produces cotton and sugar.

PROPRIA, in state of Sergipe, on R. São Francisco ; lat. $10^{\circ} 13' S.$; pop. 7,000 (U.) and 30,000 (D.). Communicates by river with Penedo and Joazeiro. Produces cotton, coffee, sugar, cereals, and tobacco. Hotel : *Central*.

PYRENOPOLIS, in state of Goyaz, on R. das Almas 2,400 ft. above sea-level ; lat. $16^{\circ} 12' S.$; pop. 12,000. An old town, with fine cathedral. The district produces cattle, tobacco, sugar, cotton, timber, rubber, and medicinal plants, and various minerals—precious stones, crystal, gold, and silver.

Q

QUIPAPA, in state of Pernambuco, on R. Quipapa ; lat. $8^{\circ} 49' S.$; pop. 5,000 (U.) and 30,000 (D.). Communicates by

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S. Francisco Railway with Recife (200 k.). Chief products : sugar and tobacco.

QUIXADA, in state of Ceará, near R. Titia ; lat. $4^{\circ} 55' S.$; pop. 6,000 (U.) and 20,000 (D.). Communicates by the Baturité Railway with Fortaleza (187 k.). Produces cotton, cereals, maniçoba rubber, and cattle.

QUIXERAMOBIM, in state of Ceará, on river of same name ; lat. $5^{\circ} 7' S.$; pop. 10,000 (U.) and 15,000 (D.). Communicates by the Baturité Railway with Fortaleza (235 k.). Produces cotton, cereals, and cattle ; is also a favourite health resort.

R

RECIFE, or **PERNAMBUCO**, cap. of the state of Pernambuco, at the mouth of the rivers Capiberibe and Biberibe ; lat. $8^{\circ} 38' S.$; pop. 200,000. Communicates by G.W. Railway with many inland towns. The buildings include the Governor's palace, municipal buildings, library, and theatre. Electric lighting and trams. The sanitation, till recently neglected, has now been rectified. Great harbour improvements have also been effected recently. The industries include cotton-weaving, sugar-refining, brewing, distilling, tanning. The chief exports are cotton, sugar, rum, hides, and cereals. British and American Consuls are stationed here. The cost of living is unusually high. Hotels : *France* and *Pension von Landy*.

RIACHAO, in state of Sergipe, on R. Machado ; lat. $11^{\circ} S.$; pop. 19,000 (D.). Produces sugar, cotton, and cereals.

RIACHUELO, in state of Sergipe, on R. Sergipe ; lat. $10^{\circ} 43' S.$; pop. 9,000 (D.). Produces sugar, cotton, tobacco, rice, and mandioca.

RIO BRANCO, in the Territory of Acre, on R. Aquiry or Acre ; lat. $9^{\circ} 56' S.$; pop. 1,000 (U.) and 11,000 (D.). Cap. of the dep. of Alto Acre. Exports rubber and medicinal plants.

RIO CLARO (Goyaz). *See* Bom Fim.

RIO VERDE, in state of Goyaz, on the R. Verde Grande ; lat. $18^{\circ} 15' S.$; pop. 15,000 (D.). Produces swine, cattle, and hides.

RIO FORMOSA, in state of Pernambuco, on R. Formoso ; lat. $8^{\circ} 40' S.$; pop. 39,000 (D.). Produces sugar, cotton, coffee, maize, and mandioca.

ROSARIO, in state of Matto Grosso, on R. Cuyuba ; lat. $14^{\circ} 54' S.$; pop. 9,000 (D.). Mainly a stock-rearing district, producing cattle and hides ; rubber and other forest products are also exported.

S

SALGUEIRO, in state of Pernambuco, on R. da Terra Nova ; lat. $8^{\circ} 8' S.$; pop. 12,000 (D.). Produces cotton, cereals, and timber ; gold, mica, and rock crystal are found in the neighbourhood.

SANTA ANNA DE MATTOS, in state of Rio Grande do Norte, near the R. Santa Anna, a tributary of the Assu ; lat. $5^{\circ} 52' S.$

SANTA ANNA DO PARANAHYBA, in state of Matto Grosso, near R. Parnahyba ; lat. $19^{\circ} 50' S.$, on the borders of S. Paulo and Matto Grosso ; pop. 8,000 (D.). Chief products : cattle.

SANTA CRUZ, in state of Goyaz. A town of 6,000 inhabitants ; lat. $7^{\circ} 32' S.$; 112 m. from Araguay, the border station of the Goyaz Railway in Minas Geraes. The centre of a flourishing municipality producing very fine tobacco. There are valuable auriferous reefs in the district, and many abandoned mines. Will one day be an important mining centre.

SANTA LUZIA, in state of Goyaz, on R. São Bartholomeo ; 3,050 ft. above sea-level ; lat. $16^{\circ} 22' S.$; pop. 6,000 (D.). Produces maize, cotton, and rice, and manufactures marmalade. Gold and rock crystal are found in the district.

SANTA LUZIA DO NORTE, in state of Alagôas, where the R. Satuba enters the Lagoa Norte ; lat. $9^{\circ} 39' S.$; pop. 21,000 (D.). Produces sugar, rice, mandioca, maize, and vegetables.

SANTA PHILOMENA, in state of Píguhy, on R. Parnahyba lat. $9^{\circ} 5' S.$; pop. 9,000 (D.). Produces cattle and forest products, *e.g.*, maniçoba rubber, carnauba wax, and copaiba.

SANTA RITA, in state of Parahyba, on R. Parahyba; lat. $7^{\circ} 13' S.$; pop. 17,600 (D.); communicates by G.W. Railway with Parahyba (52 k.). Produces cotton, sugar, and cereals.

SANTAREM, in state of Pará, on R. Tapajos, at confluence with the Amazon; 500 k. by river from Belém; lat. $2^{\circ} 25' S.$; pop. 6,000 (U.) and 28,000 (D.). The buildings include municipal offices, church, and theatre. Exports rubber, cocoa, Brazil nuts, vanilla, sarsaparilla, cattle, and fish.

SANTO AMARO (1), in state of Bahia; lat. $12^{\circ} 24' S.$; pop. 28,000 (U.) and 103,000 (D.). Communicates by the S. Amaro Railway with Jacu. A manufacturing town, with good lighting, tramway, and sanitary services, and many fine buildings. Large sugar refineries and numerous distilleries; also soap factories and foundries. Exports sugar and spirits.

SANTO AMARO (2), in state of Sergipe; lat. $10^{\circ} 47' S.$; pop. 9,000 (D.). Produces sugar, rum, cotton, and cereals.

SANTO ANTONIO, in state of Amazonas, on R. Purus, 1,156 k. by river from Manáos. Port of call for river steamers; produces rubber, nuts, and other forest products.

SÃO ANTONIO DE BALSAS, in state of Maranhão, on R. das Balsas; lat. $8^{\circ} 19' S.$; pop. 9,000 (D.). Produces maniçoba rubber, sugar, mandioca, rice, and maize.

SÃO BENTO (1), in state of Pernambuco, on R. Una; lat. $8^{\circ} 33' S.$; pop. 12,000 (D.). 211 k. from Recife. Produces cattle, hides, and cheese.

SÃO BENTO (2), in state of Rio Grande do Norte, on left bank of R. Curimatahú; lat. $6^{\circ} 23' S.$

SÃO CHRISTOVAO, in state of Sergipe, on R. Paramopona; lat. $11^{\circ} 3' S.$; pop. 11,000 (D.). Produces salt, sugar, and coco-nut oil; has mineral springs of medicinal quality.

SÃO FELIPE, in state of Amazonas, on R. Juruá; lat. $6^{\circ} 21' S.$; pop. 4,000 (D.). Chief product, rubber.

SÃO FELIX, seaport in state of Bahia, on R. Paraguassú, opposite Cachocira ; lat. $12^{\circ} 48' S.$; pop. 8,000 (U.) and 35,000 (D.). Communicates by Central Railway of Bahia with Feira de Sant' Anna and Machado Portella (255 k.). Produces tobacco, sugar, coffee, and cereals, and has great tobacco factories, producing a special brand of high-grade cigars.

SÃO GABRIEL, in state of Amazonas, on Rio Negro ; lat. $0^{\circ} 7' S.$; pop. 7,000 (D.). Produces rubber, cocoa, and Brazil nuts.

SÃO JOÃO, in state of Piauhý, on R. Piauhý ; lat. $8^{\circ} 12' S.$

SÃO JOÃO DE ARAGUAYA, in state of Pará, on R. Araguaya, at confluence with the Tocantins ; lat. $5^{\circ} 40' S.$

SÃO JOÃO DE CARIRY, in state of Parahyba ; lat. $7^{\circ} 14' S.$; pop. 18,000 (D.). Produces cotton, sugar, cereals, with cattle and hides.

SÃO JOSÉ DE MIPIBÚ, in state of Rio Grande do Norte, on R. Trairy ; lat. $6^{\circ} 3' S.$; pop. 3,000 (U.) and 15,000 (D.). Communicates by G.W. Railway with Natal (38 k.). Produces sugar, cotton, and cereals.

SÃO LUIZ, cap. of the state of Maranhão, on the island of Maranhão ; lat. $2^{\circ} 36' S.$; pop. 40,000 (U.). The lower city contains the government buildings, cathedral, bishop's palace, theatre, library. The city is not only a commercial but also a literary and artistic centre, known as the "Athens of Brazil." The industries include cotton-weaving, hammock-making, sugar-refineries, distilleries, and fruit-preserving. The multifarious exports include cattle, hides and skins, cotton, rubber, gums, timber, fish, and cereals. There is a British Consul. Hotel : *Central*.

SÃO LUIZ DE CACERES, in state of Matto Grosso, on R. Paraguay ; lat. $16^{\circ} 10' S.$; pop. 12,000 (D.). Trading centre, exporting cattle and hides, and considerable quantity of rubber, medicinal plants, and other forest products.

SÃO MIGUEL DE CAMPOS, in state of Alagôas, on R. São

Miguel ; lat. $9^{\circ} 50' S.$; pop. 5,000 (U.) and 24,000 (D.). Centre of an agricultural and pastoral district near the coast.

SÃO PAULO DE OLIVENCA, in state of Amazonas, on R. Amazon, 1,153 k. by river from Manáos ; lat. $2^{\circ} 54' S.$; pop. 9,000 (D.). Port of call for river steamers. Produces rubber, cocoa, and mandioca.

SENADOR POMPEO, in state of Ceará, on R. Quixeramobim ; lat. $5^{\circ} 33' S.$; pop. 10,000 (D.). Communicates by Baturité Railway with Fortaleza (287 k.). Chief industry, cattle-breeding.

SENNA MADUREIRA, in the Territory of Acre, cap. of dep. of Alto Purus, on R. Purus ; lat. $9^{\circ} 14' S.$; pop. 900 (U.). Exports rubber, Brazil nuts, and medicinal plants.

SERINHAEM, in state of Pernambuco, on river of same name ; lat. $8^{\circ} 37' S.$; pop. 13,000 (D.). Produces cotton and sugar.

SERRINHA, in state of Bahia, on R. Inhambupe ; lat. $11^{\circ} 45' S.$; pop. 6,000 (U.) and 15,000 (D.). Communicates by S. Francisco Railway with Joazeiro (341 k.) to the N., and with Alagoinhas (111 k.) and Bahia to the S. Produces cotton, tobacco, wine, rubber, with cereals and vegetables.

SIMÃO DIAS, in state of Sergipe ; lat. $10^{\circ} 44' S.$; pop. 13,000 (D.). Produces coffee, cotton, and cereals.

SOBRAL, in state of Ceará, on R. Acarahu ; lat. $3^{\circ} 43' S.$; pop. 35,000 (D.). Communicates by the Sobral Railway with the port of Camocim (128 k.) and with Ipu (88 k.). Ranks as second city in the state ; a healthy town at foot of lofty hills. Centre of a fertile district, producing cattle, carnauba wax, maniçoba rubber, cotton, manioca, tobacco, and timber.

SOLEDADE, in state of Parahyba, on R. Mucuitu ; lat. $6^{\circ} 58' S.$; pop. 9,000 (D.). Produces cotton, tobacco, and cereals.

SOURE, in state of Pará, on island of Marajo ; lat. $0^{\circ} 40' S.$; pop. 18,000 (D.). Exports cattle and fresh fish. Is a popular holiday resort, with excellent climate.

SOUZA, in state of Parahyba, on R. do Peixe ; lat. $6^{\circ} 59'$ S. ; pop. 2,000 (U.) and 16,000 (D.). Produces sugar, cotton, cereals, cattle, and carnauba wax.

T

TABATINGA, in state of Amazonas, on R. Amazon, 1,321 k. by river from Manáos ; a port of call for river steamers.

TACAPATU, in state of Pernambuco, near the falls of Paulo Affonso on the R. São Francisco ; lat. $9^{\circ} 10'$ S. ; pop. 11,000 (D.). 1,300 ft. above sea-level. Produces sugar, cotton, cereals, and cattle.

TAIPÚ, in state of Rio Grande do Norte, on R. Ceará-Mirim ; lat. $5^{\circ} 37'$ S. ; pop. 4,000 (D.). Communicates by Central Railway with Natal (56 k.). Produces cotton, maize, rice, and mandioca.

TAQUARETINGA, in state of Pernambuco ; lat. $7^{\circ} 49'$ S. ; pop. 5,000 (U.) and 20,000 (D.). Produces coffee and cotton ; saltpetre is found in the district.

TEFFE, in state of Amazonas, on R. Amazon ; 555 k. by river from Manáos ; lat. $2^{\circ} 58'$ S. ; pop. 14,000 (D.). Exports Brazil nuts, tobacco, copaiba oil, rubber, mandioca flour, and dried fish.

THEREZINA, cap. of the state of Piauhy, on R. Parnahyba ; lat. $5^{\circ} 4'$ S. ; 360 k. by river from the port of Amarração ; pop. 35,000 (U.) and 55,000 (D.). The chief buildings are the Legislative Chambers, the palace of government, São Benedicto, the theatre, and market. Cotton, soap-making, sugar-refining, and distilling are among the industries. Exports cotton, sugar, rice, rubber, and cattle. Hotels: *Castello*, *Branco*, and *Castro Silva*. (A railway from Ipu, 424 k., is in course of construction.)

TIMBAUBA, in state of Pernambuco ; lat. $7^{\circ} 32'$ S. ; 585 ft. above sea-level ; pop. 55,000 (D.). Communicates by G.W. Railway with Recife (118 k.). Produces coffee, cotton, tobacco, and cereals.

TRAIPÚ, in state of Alagôas, on R. São Francisco ; lat. $9^{\circ} 59'$ S. ; pop. 25,000 (D.). Produces cotton and cattle.

TRIUMPHO, in state of Pernambuco ; lat. $8^{\circ} 4' S.$; 3,350 ft. above sea-level ; pop. 20,000 (D.). Produces coffee, sugar, mandioca, and rice.

TURY-ASSU, in state of Maranhão, on river of same name ; lat. $1^{\circ} 46' S.$; pop. 3,000 (U.) and 15,000 (D.). Produces coffee, cotton, cocoa, maize, rice, vanilla, cumaru, and fish.

TUTOYA, in state of Maranhão, on the W. mouth of the Parnahyba river ; lat. $2^{\circ} 51' S.$; pop. 8,000 (D.). Seaport with safe harbour, exporting cotton, cereals, gums and oils, timber, cattle, hides, and skins.

U

UNIÃO, in state of Alagoas, near R. Mundahu ; lat. $9^{\circ} 12' S.$; pop. 10,000 (U.) and 60,000 (D.). Communicates by G.W. Railway with Maceió (88 k.). Manufacturing and trading centre, producing leather, ropes, brooms, brandy, cattle, hides, and the usual crops.

URUCARA, in state of Amazonas, on R. Madeira ; lat. $2^{\circ} 37' S.$; pop. 3,000 (D.). Exports rubber, Brazil nuts, coffee, cocoa, tobacco, mandioca, dried fish, and copaiba oil.

URUCURITUBA, in state of Amazonas.

V

VALENCA, (1) in state of Bahia, at mouth of R. Una ; lat. $13^{\circ} 28' S.$; pop. 30,000 (D.). Communicates by steamer with Bahia. The industries include cotton textiles, ship-building, sugar-making, distilling, and ironworks. Exports coffee, cocoa, rice, tobacco, sugar, spirits, timber, flour, and textiles. (2) In state of Piahy ; lat. $6^{\circ} 32' S.$; pop. 3,000 (U.) and 16,000 (D.). Produces rubber, cattle, and hides.

VIANNA, in state of Maranhão, on lake of same name ; lat. $3^{\circ} 12' S.$; pop. 8,000 (U.) and 16,000 (D.). Centre of an agricultural and grazing district, producing rice, cotton, sugar, cocoa, mandioca, fish, and game.

VICOSA, in state of Ceará, in the N. of the state ; lat. $3^{\circ} 30' S.$; about 70 k. S.W. of Parnahyba.

VICOSA, or **VILLA VICOSA**, in state of Alagôas, on R. Parahyba; lat. $9^{\circ} 22' S.$; pop. 47,000 (D.). Communicates by the Central Railway of Alagôas with Maceió (97 k.). Produces cotton, sugar, and timber.

VICTORIA, in state of Pernambuco, on R. Tapacora; lat. $8^{\circ} 10' S.$; 420 ft. above sea-level; pop. 12,000 (U.) and 52,000 (D.). Communicates by G.W. Railway with Recife (51 k.). Produces sugar, cotton, cocoa, and cereals, and has a well-known fair of cattle and horses.

VICTORIA, in state of Piauhý, on left bank of R. Parnahyba; lat. $9^{\circ} 10' S.$; a little above the head of navigation.

VILLA BELLA, in state of Pernambuco, on R. Pajehu; lat. $8^{\circ} 17' S.$; pop. 9,000 (D.). Produces cotton and cattle.

VILLA NOVA, in state of Rio Grande do Norte, on left bank of R. Curimatahú; lat. $6^{\circ} 20' S.$ Communicates by railway with Natal to the N. and Nova Cruz to the W.

VIZEU, in state of Pará, on R. Gurupy; lat. $1^{\circ} 6' S.$; pop. 1,000 (U.) and 16,000 (D.). The district produces tobacco, rice, mandioca, cocoa, copahu, fish. Cattle and horses are bred and exported. A little gold is also worked.

GENERAL TABLE OF SOUTH AMERICAN CURRENCIES

	Standard.	Unit.	English & U.S.A. Par Value.	Usual Unit of Commerce.	English & U.S.A. Value.	Remarks.
ARGENTINA	Gold	Peso nacional or peso, or (gold dollar) = 100 cen- tavos	47.619d. (practic. = 48d. .965 \$ (96.5 cents.)	Peso papier (paper dollar)	20.97d. (practic. = 21d.) 42 cents	£1 = 5.04 gold pesos (the gold peso is used for official purposes only) £1 = 11.45 paper pesos. \$1 m/n ("moneda nacional") = one paper dollar.
BOLIVIA	Gold	Peso or (gold dollar)	4 d. .973 \$	Boliviano (= 10 reales fuertos or 100 centavos)	19.2d. 38.9 cents	£1 = 12.5 bolivianos N.B.—Accounts are often reckoned in the old dollar of 8 reales or 80 centavos, instead of the true dollar of 100 centavos.
BRAZIL	Gold	Milreis gold	26.934d. (practic. = 27d.) .546 \$	Milreis papier	16d. 32.4 cents	£1 = 8.97 milr. gold, or 15 milr. papel.
BRITISH GUIANA	Gold	Sovereign	240d. 4.866½ \$	Dollar (= 100 cents)	50d.	English coins, including fourpenny pieces, current; but accounts are kept in dollars and cents.
CHILE	Gold	Peso or (gold dollar)	18d. .365 \$	Peso papier	About 11d. c. 22 cents	£1 = 13½ pesos gold. The paper peso fluctuates considerably. The average in 1910 was 10¾d. (The gold peso is used for official pur- poses only.)
COLOMBIA	Gold	Peso or Colombiano	48d. 1.00 \$	Peso papier	.48d. (under ½d.) c. 1 cent	£1 = 5 dollars gold or 500 dollars papier. United States' currency is largely used. In Cucuta and on the K. Atrato silver principally cir- culates.
DUTCH GUIANA	Gold	10-florin piece	200d.	Gulden or florin (= 100 cents)	20d.	£1 = 12 gulden.
ECUADOR	Gold	Sucré	24d. .487 \$	Sucré	24d. 48.7 cents	£1 = 1 condor or 10 sucres. No paper money.
FRENCH GUIANA	Gold and Silver	20-franc piece 5-franc piece	192d. 48d.	Franc (= 100 centimes)	9.6d.	£1 = 25 francs.
PANAMA	Gold	Balboa	49.5d. 1.00 \$	Silver peso	27.75d. 54.50 cents.	£1 = 4.84 balboas or 9.68 pesos. No paper money. United States' currency is largely used.
PARAGUAY	Gold	Peso or (gold dollar)	47.619d. (practic. = 48d.) .972 \$	Peso papier	3.473 l. (average in 1910) c. 7 cents (1910)	The paper dollar fluctuates; average for 1910 was £1 = 69.10 pesos. Quotations are often made in gold dollars, at the rate of £1 = 5 pesos. (The gold peso is used for official purposes only.)
PERU	Gold	Sol (= 100 centesimos)	24d. 4.866½ \$	Sol	24d. 48 cents	£1 = 10 soles. No paper money.
URUGUAY	Gold	Peso nacional (= 100 cen- tesimos)	51d. to 53d. 1.034 \$	Peso	51d. to 53d. 1.034 \$	The peso fluctuates. £1 = about 4.70 dol. No paper money.
VENEZUELA	Gold	Venezolano or Peso fuerte (= 5 boli- vares, or 100 centavos)	47.57d. (practic. = 48d.) .965 \$	Bolivar	9.2d. 19.3 cents	£1 = 26 bolivares. (The bolivar approximately = 1 franc.) N.B.— Accounts are frequently reckoned in pesos sencillos or macuquinos of four, instead of five, bolivares (i.e., 80, not 100, centavos); and in centavos of four, instead of five, centimes.
FALKLAND ISLANDS	(British)	currency				

For further details on the currency of the country see special table.

APPENDIX A

MONEY, WEIGHTS AND MEASURES

THE standard is gold, the unit being the (gold) milreis (= 1,000 reis, expressed 1\$000), of which the par value is 26.934d., practically 27d. The early currency of Brazil was regulated by the Portuguese law of 1688. The par value of the milreis was fixed in 1833 at 43.5d., but reduced to its present rate of 27d. in 1849. During the nineteenth century great depreciation of the currency with occasional violent fluctuations of exchange occurred. Gold and silver were gradually withdrawn to Europe and replaced first by immense quantities of debased copper, and later by large issues of paper; the note issues were in excess of requirements and no adequate reserve of gold was maintained for their conversion. In 1898 exchange touched its lowest point (5½d.), equivalent to a depreciation of 78.9 per cent., and stringent and successful measures of reform were undertaken. In 1906 a Conversion Office was established, where the former "inconvertible" paper is exchanged for gold; as it is redeemed it is burnt, and replaced by notes payable in gold. The rate of exchange for this purpose was fixed at 15d., and raised on 31st Dec., 1910, to 16d. The creation of two new coins is now in contemplation, one of gold, value £1, the other of silver, value 9.6d., so that 25 of the silver pieces are equal to one gold piece. The par value of the gold milreis would thus be reduced to 16d.; in other words, the milreis gold and the milreis paper would henceforth be of the same value.

The coins in use are—

Gold (.917 fine)	{	20 milreis =	£2 4 10.6
		10 „ =	1 2 5.3
		5 „ =	11 2.6
Silver (.900 fine)	{	2 „ =	32d.
		1 „ =	16d.
		$\frac{1}{2}$ „ =	8d.

Nickel—400, 200, and 100 reis = 6.4d., 3.2d., and 1.6d. respectively.
 Bronze—40 and 20 reis = .64d. and .32d. respectively (*i.e.*, rather over
 1d. and 1d.).

£1 = almost 15 milreis (15\$000).

A "conto" of reis = 1,000 milreis (1,000 \$000) = £67 3s. 9d. It is represented by two dots (:), e.g., Rs. 10,500 : 500 \$500 = 10,500 contos, 500 milreis, and 500 reis.

Legal tender—

Bronze up to 200 reis (= 3·2d.)	
Nickel " 1 milreis (= 16d.)	
Silver " 29 milreis (= £1 19s. 6d.)	

The metric system, adopted in 1862, was made compulsory in 1872, and is in use in all government offices. The ancient Portuguese measures, however, still obtain in certain districts and trades. The following may be instanced—

Vara = 1·1110 metres = 1·2150 yds.	
Libra = 0·4595 kilos = 1·012 lbs. avoird.	
Arroba = 14·6896 kilos = 32·3847 avoird.	
Quintal = 4 arrobas 58·785 kilos = 129·54 avoird., or 1·1169 cwt.	
Alqueire (5,000 sq. braças) = (sq. measure of land) at S. Paulo = 174·24 acres.	
Ditto (= 10,000 sq. braças) at Rio = 348·48 acres.	
Alqueire (dry measure) at Bahia = 36·27 litres = 0·9974 pint.	
Ditto at Rio = 39·9970 litres = 1·1004 pints.	
Sacca (sack) may be of 2 or of 3 alqueires, i.e., 73 or 109 kilos.	
Sacca of sugar usually = 50 kilos.	
" " " (Pernambuco) = 60 kilos (for Rio, Santos, Paraná).	
" " " = 75 kilos (for other ports and for export).	
" of cotton = 80 " kilos.	
1 barrica (barrel) of sugar = 105 kilos.	
$\frac{1}{2}$ " " " = 88 "	
$\frac{1}{4}$ " " " = 58 "	
$\frac{1}{8}$ " " " = 38 "	
$\frac{1}{16}$ " " " (refined) = 52 "	
1 barrel or sack of flour = 88·95 kilos.	
" of cement = 50 "	
1 sack of cotton = 80 "	
1 bale " = 180 "	
At Pará, an Arroba of tobacco = 15 kilos.	
Alqueire of grain = " " or litres.	
Frasqueira of rum = 25 " "	
Cofa of fish = 30 " "	
Lata (tin) of oil = 15 " "	

APPENDIX B

POSTAL AND TELEGRAPH GUIDE

I. POST OFFICE

(a) THE postal service in Brazil, under control of the Ministry of Communications and Public Works, is subdivided into twenty-one postal administrations in four classes (one for the Federal District and one for each State), with three sub-administrations (for the districts of Diamantina, Uberaba, and Camponha in Minas Geraes). There are about 3,500 officers, and a staff of 9,000.

The charges are as follows—

<i>Letters—</i>		reis.							
Urban	100	per 15 gr. ($\frac{1}{2}$ oz.) or fraction thereof							
Inland (i.e., inter-state)	200	" " " " " "							
Foreign	200	" 30 " " " "							
<i>Letter-cards—</i>						Reis.			
Inland	200								
Foreign	300								
<i>Single Postcards—</i>									
Inland	50								
Foreign	100								
<i>Double Postcards—</i>									
Inland	100								
Foreign	200								
<i>Manuscripts—</i>						Reis.			
Inland	100	per 50 gr.							
Foreign	200	" 50 "							
<i>Newspapers printed in Brazil—</i>									
Inland	10	per 100 gr.							
Foreign	50	" 50 "							
<i>Printed Matters—</i>									
Inland	20	per 50 gr.							
Foreign	50	" 50 "							
<i>Samples—</i>									
Inland	120	per 50 gr.							
		160	" 100 "						
		320	" 200 "						
		400	" 250 "						
		500	" 350 "						
Foreign	200	From 50 "							

<i>Parcels—</i>		Reis.
Inland registration fees	200	
Foreign " " " "	400	
Advice of Reception, Inland	100	

International Post Office Orders have been issued since 1901. The charges are—

<i>Stamps, etc.—</i>		
10 reis	200 reis	700 reis
20 "	300 "	1 milreis
50 "	400 "	5 "
100 "	500 "	

Stamped letter cards and postcards are issued, and stamped envelopes for 200, 300, 400, and 700 reis.

Money Orders—

(a) Inland—Up to 25 milreis	300 reis
" 50 " " " "	600 "
" 100 " " " "	1,000 "
" 150 " " " "	1,500 "
" 200 " " " "	2,000 "
For each additional 200 milreis or fraction thereof	500 "
(b) Foreign—Up to 25 milreis	400 reis (6d.)
" 50 " " " "	700 " (10½d.)
" 100 " " " "	1\$200 " (1s. 6d.)
" 150 " " " "	1\$750 " (2s. 2½d.)
" 200 " " " "	2\$250 " (2s. 9½d.)
For each 200 milreis over	
100\$000	500 " (7½d.)

(b) *From England to Brazil.*

Letters (up to 2 x 1 x 1 ft.), 2½d. for the first oz. ; 1½d. for each oz. afterwards.

Postcards—Single, 1d. ; reply, 2d.

Printed Matter (newspapers, books, catalogues, photographs, engravings, music, etc.) up to 1½ x 1 x 1 ft. and 4 lbs., ½d. per 2 oz.

Commercial and legal papers, etc. (including MSS., invoices, type-written matter, etc., partly written), up to 1½ x 1 x 1 ft., and 4 lbs., ½d. per 2 oz. ; *minimum charge*, 2½d.

Samples, Patterns, Scientific Specimens, up to 12 x 8 x 4 in., and 12 oz., ½d. per 2 oz. ; *minimum charge*, 1d.

Parcels—Up to 3 lbs., 3s. 6d.

" 6½ lbs., 4s.

Maximum length usually = 2 ft., and length + girth 4 ft., but for umbrellas, etc., a greater length is allowed. A Customs declaration, obtainable at Post Offices, must be filled up and signed. Certain articles (*e.g.*, letters, explosives, spirits) are prohibited. Customs' duties are usually collected on delivery, but may be prepaid. Time of transit about 4 weeks.

Money Orders—

Not exceeding £1	..	3d.
" " 2	..	6d.
" " 4	..	9d.
For each additional £2		3d. (up to £10 or £40)

Mails leave Rio de Janeiro weekly, on alternate Wednesdays by R.M.S.P. Co., and by other steamers according to arrival. They leave Southampton and Liverpool alternate weeks, on Fridays and Thursdays respectively; and *viâ* Bordeaux on the same days as Liverpool. Passage 13–18 days.

They leave New York by Lamport & Holt Line or Brazilian Lloyd, four times a month.

II. TELEGRAPHS

(i) *Home*

The telegraphs in Brazil are of five classes—

(1) The national service, or "General Administration of the Telegraphs, which like the Post Office, belongs to the Ministry of Communications and Public Works. It controls upwards of 32,000 kilometres of lines and nearly 700 officers.

(2) The railway telegraphs, with about 20,000 kil. of lines and 1,500 offices.

(3) The submarine cables of the Western Telegraph Co., about 18,000 kil. of lines, and nine offices.

(4) The subfluvial cables of the Amazon Telegraph Co., about 3,000 kil. of lines, and 17 offices.

(5) The Rio Grande do Sul system, about 1,600 kil. of lines, and 30 offices.

Not all the railway offices, however, work in connection with the General Administration.

There is a fixed tax of 600 reis for telegram, with additional charges which vary in different states. In the Federal capital 20 words may be sent for 500 reis; in the states the rate varies from 100 to 300 reis per word.

There is an abatement of 75% for press telegrams.

(ii) *Foreign*

The rates of telegrams from Rio de Janeiro to places abroad are given in francs and centimes (the franc = 600 reis paper).

				fr. c.	
Uruguay	..	..	..	1.25	per word
Argentina	..	..	..	1.75	"
Paraguay	..	..	..	2.05	"
Chile	..	..	..	2.55	"
England	..	..	..	3.25	"
France, Germany, Holland, and Belgium	..	..	..	3.63	"
Peru	..	..	..	3.80	"
Russia	..	..	..	3.95	"
Texas and Louisiana	..	..	..	4.25	"
Rest of U.S.A. and Canada	..	..	..	4.45	"
Ecuador	..	..	..	4.55	"
Cuba	..	..	..	4.60	"
Colombia	..	..	..	5.55	"
Cape Town	..	..	..	5.75	"

(iii) *From England to Brazil*

Pernambuco Town, 1s. 7d. per word.

Amazon Co. Offices, 1st zone, 3s. 10d.¹; 2nd zone, 5s.²Other parts of Brazil, 2s. 6d.³(iv) *Wireless Telegraphy*

There are six Marconi wireless stations in the State of Rio de Janeiro, and others at Olinda, Bahia, Santos, S. Catharina, Rio Grande do Sul, and the island of Fernando Noronha (the latter with a range of 1,000 miles). In the Amazon district there are stations at Pará, Santarem, Manáos, Porto Velho, Rio Branco, Senna Madureira, and S. Antonio, and one in the Acre Territory.

The rates are as follows—

For coast telegrams :	60 centimes	per word	(minimum 6 francs)
To a German or Dutch ship :	1s. 4d.	"	(" 3s. 4d.)
" Spanish ship :	3d.	"	(" 2s. 6d.)
" British or other ship :	4d.	"	(No minimum)

III. TELEPHONES

The telephonic service is (a) Federal, (b) private. The Federal Government has lines in Rio, and also communicating with Petropolis, Nictheroy, and Therezopolis. There are 25 private company lines in Rio Grande do Sul, 14 in S. Paulo, 10 in Rio, and others in Piauhy (3), Bahia, Minas Geraes, Maranhão (2 each), and Ceará, Pernambuco, Alagoas, Espirito Santo, Paraná, and the Federal District (1 each).

¹ *Via* Brazilian Land Lines, 4d. less.² " " " " 3d. less.

APPENDIX C

STEAMSHIP LINES

I. EUROPE TO BRAZIL

(1) *English Companies*—

By *Royal Mail Steam Packet* and *Pacific Steam Navigation Co.* (combined). Service "A" leaves Southampton on Fridays, usually weekly; service "O" leaves Liverpool on alternate Thursdays; service "D" and the "intermediate" west coast service, which calls at Rio are also fortnightly from Liverpool.

The route by "A" steamers is: Southampton, Cherbourg, Coruña, ¹Vigo, ¹Leixões, Lisbon, ¹Madeira, ¹St. Vincent (C.V.), Pernambuco, Bahia, Rio de Janeiro, Santos, Monte Video, Buenos Aires.

The route by "O" steamers is: Liverpool, La Rochelle-Pallice, Coruña, Vigo, Leixões, Lisbon, Las Palmas, St. Vincent (C.V.), ²Pernambuco, ²Bahia, Rio de Janeiro, ³Santos; then by Monte Video to Magellan Straits and West Coast.

The route by "D" steamers is: Liverpool, Coruña, Villagarcia, Vigo, Leixões, Lisbon, Rio de Janeiro, Santos (outwards only), and Buenos Aires.

The route by the intermediate services from Liverpool varies, as may be arranged.

The fares to Rio by "A" and "O" steamers are: 1st class, £33; 2nd, £22; and 3rd, £8 (single). By "D" steamers, 1st class, £25; and by intermediate service, £18. The average passage is 17 days from Southampton, and 19 or 20 from Liverpool.

The *Lamport & Holt Line* take a limited number of 1st class passengers: (a) from Liverpool, (b) from Antwerp and London, generally calling at Rio, Bahia, and Santos; but the ports of call vary, and sometimes Rio Grande do Sul is visited. Route *viâ* New York and Barbadoes, 17 days.

¹ Not called at by every steamer.

² Monthly outwards and homewards.

³ Monthly outwards and fortnightly homewards.

The *Booth Line* runs a fortnightly service to the Amazon ; the route is Liverpool, Plymouth, Cherbourg, Havre, Vigo, Leixões (Oporto), Lisbon, Madeira, Pará, Manáos. The passage averages 17 days to Pará, and 24 days to Manáos. Also monthly from Liverpool to Maranhão, Ceará, and Parnahyba.

The New Zealand and *Shaw Savill* steamers ply monthly on homeward voyage from Rio and Montevideo and Teneriffe, to London and Plymouth.

The *Nelson Line* runs weekly from London to Rio de Janeiro.

The Houlder and McIvor Companies also run to Brazil.

(2) *French Companies*—

The *Compagnie Sud Atlantique* (*Messageries Maritimes*), from Bordeaux to Lisbon, Dakar, Pernambuco, Bahia, Rio de Janeiro, Santos, Monte Video, and Buenos Aires.

The *Compagnie des Chargeurs Réunis*, from Havre to Leixões, Lisbon, Pernambuco, Bahia, Rio de Janeiro, and Santos.

The *Société Générale des Transports Maritimes*, from Marseilles to Pernambuco, Bahia, Rio de Janeiro, Santos, Monte Video, and Buenos Aires.

(3) *German Companies*—

The *Hamburg-American* and *Hamburg-South American Lines*, combined, run weekly from Hamburg, Boulogne, Southampton to Lisbon, Brazil and the River Plate.

The *North German Lloyd* run from Bremen, Antwerp, and Boulogne, to Lisbon, Madeira, and Brazil (North, Central, and South).

(4) *Italian Companies*—

Eight lines ply between Genoa and Brazil to the River Plate, viz., *Lloyd Italiano*, *La Veloce*, *Navigazione Generale Italiana*, *Lloyd Sabaudo*, *Lloyd del Pacifico* (also to Valparaiso), *Ligure Brasiliana*, *Società di Navigazione à Vapore*, and *Italia*.

(5) *Other nations*—

Lines run from other European companies include the *Austrian Lloyd* from Trieste ; the *Holland Lloyd* from Amsterdam and Dover ; *Dykman's Line* from Antwerp ; the *Rederie Aktiebolaget* from Malmo, Stockholm, Gothenburg, calling at

Newcastle and Hull ; the Portuguese *Sociedad Anónima de Navegación Transatlántica* (ports between Vigo and Barcelona to Rio) ; the Spanish *Compañía Transatlántica de Barcelona* ; and a Russian service from Odessa.

II. THE UNITED STATES

The United States are connected with Brazil by the *Prince Line* (New York and New Orleans) ; by the *Booth Line* (*via* Barbadoes) —Fares : New York to Pará, \$80 ; to Manáos, \$100—and by the *New Brazilian Lloyd* (River Plate, Brazil, and United States).

III. COAST SERVICES

The coasting trade, reserved by law for Brazilian vessels, is mainly in the hands of the *New Brazilian Lloyd*, which has a fleet of seventy-two vessels, and receives a government subsidy of £187,000 per annum. It connects Rio with all parts to the north and south, by express and slow services ; for details consult their time-table. Other companies are—

Lage Irmãos, 15 ships ; *Esperança Marítima*, 6 ships ; *Companhia Pernambucona*, 8 ships ; *Companhia Comercio e Navegacao* (cargo only ; 12 ships) ; *Empresa de Navegação* (Porto Alegre to Buenos Aires) ; *Navegação do Alto Uruguay*, *Empresa Joaquim Garcia*, 2 ships (a Santos' company, subsidised by the S. Paulo Government) ; *Empresa de Navegação Rio de Janeiro* (north from Rio to Bahia and Aracajú), 3 ships ; *Companhia São Joas de Barra e Campos*, 10 ships ; *Navegação Bahiana*, 2 small ships ; *Maranhense de Navegação a Vapor*, 4 ships (north and south from São Luiz to Maranhão ; subsidised by the Union).

IV. RIVER SERVICES

For the smaller rivers, *e.g.*, the Iguapé, Tocantins, São Francisco, the services are mentioned in the chapter on "Inland Communication and Transport" (*q.v.*). The *Amazon* is served : (a) for international communication by the *Booth Co.* (see above) ; and (b) for internal communication on its main stream and important tributaries by the *Amazon River Steam Navigation Co.* This company—an offshoot of the Booth Co.—has its headquarters at Pará, and receives an annual subsidy from the Government.

The following are a few typical fares—

	\$
Rio de Janeiro—Monte Video (1,180 geogr. miles ; 4 days)	150
Pará—Manáos (924 geogr. miles)	130
Pará—Iquitos (2,200 miles)	317
Bahia—Caravelhas	60
Joazeiro—Bom Jardim	56
„ —Pirapóra	125

The distances of some of the more important steamship routes are—

Rio to—	Miles.
Southampton	5,034
New York	4,748
Lisbon	4,214
Genoa	5,040
Trieste	5,838
Bordeaux	4,894
Antwerp	5,244
Bremen	5,507
Hamburg	5,519
Odessa	6,341
Valparaiso	4,241

NEW REGULATIONS CONCERNING MERCHANT SHIPPING AND COASTAL NAVIGATION

By Decree n° 10524, dated October 23, 1913, new regulations for the merchant marine and coastal navigation of Brazil were approved.

The maritime trade of Brazil with foreign ports is entirely free, and ships of all nations can freely load and discharge foods, and transport passengers and articles of value belonging to the Union or the individual States, provided they conform to the laws and regulations in existence in Brazil, except under the circumstances provided for under Section 13 of the Constitutional Law of Brazil.

Brazilian mercantile shipping is divided into four classes : (1) ocean trade, or voyages between Brazilian and foreign ports, or *vice versa* ; (2) long distance coastal trade, or voyages between two or more of the Brazilian States ; (3) petty coastal trade, or voyages within the boundaries of a single State ; and (4) internal shipping or voyages in or on the ports, rivers, canals, and lakes of Brazil.

Coastal navigation for the transport of merchandise can be carried on only by duly registered Brazilian vessels.

Coastal trading is prohibited to foreign vessels, which are in this sense regarded as smugglers ; they are allowed—

(1) To enter any port freely and to leave again within the stipulated period, or to stop for the purpose of landing shipwrecked or sick people ;

(2) To enter a port and to leave for another Brazilian port after having discharged all or a part of their cargo for local consumption or for re-export ;

(3) To transport from one port of the Republic to another passengers of all classes and origins, with their baggage and any animals that may belong to them, as well as postal parcels weighing not more than five kilogrammes each, agricultural and manufactured products of a perishable nature and metallic coin ;

(4) To take on board in any Brazilian port, or in several of such ports, food-stuffs intended for export to points outside the Republic ;

(5) To carry assistance from any Brazilian port to any other of the Republic, with the permission of the Government, in the case of famine, plague or other public calamity ;

(6) To transport merchandise from one Brazilian port to another in the case of exterior war, interior troubles, strikes and injury caused to the national trade and navigation by a foreign blockade, even in the event of no formal declaration of war having been made, and as soon as the public authorities deem such a course advisable ;

(7) To load or discharge merchandise or articles belonging to the public authorities.

In case of damage, of forced landing of cargo, or of other forms of "force majeure," goods transported by foreign vessels and coming from any port of the Republic, may be discharged or sold in any other port of the Republic, subject to the consent of the interested parties being obtained and the customs authorities being satisfied as to the necessity for such exceptional action.

* * * *

Navigation on the rivers and internal waters of Brazil continues to be permitted to all nations, conformably with

the laws now in force. Similar navigation is permitted to neighbouring nations according to the special treaties and agreements in existence.

* * * *

No vessel intended for ocean voyages or long distance coastal trade may be built in Brazil without the permission of the Minister of Marine, by whom the plans of the vessel must be approved.

A merchant shipping vessel, in order to be considered as Brazilian and consequently able to carry on coasting trade, must fulfil the following conditions—

- (1) It must have been built in Brazil ;
- (2) It must be the property of a Brazilian citizen or of a company or undertaking, having its registered offices in Brazil, under the sole management of a Brazilian citizen ;
- (3) It must be commanded by a Brazilian captain or master, and be manned by a crew of whom two-thirds are Brazilians, and carry a Brazilian chief engineer.

Vessels constructed abroad and legally acquired by Brazilians are also considered as Brazilian ships, and so are those captured from an enemy and declared as legal prizes, found abandoned on the high seas, confiscated for breach of Brazilian laws, or acquired by Brazilians in virtue of gifts, sales or judicial proceedings. In all cases vessels must be the property of Brazilian citizens, and must conform to the regulations mentioned above in regard to captain and crew.

* * * *

All Brazilian vessels engaged in coastal trade and carrying passengers, either casually or regularly, and making voyages of more than seventy-two hours between the place of departure and port of destination, must have on board a Brazilian doctor nominated by the Minister of the Interior.

* * * *

Vessels of all kinds intended for river navigation in the valley of the Amazon are exempt from all import duties.

Vessels engaged in river navigation in all other parts of the Republic pay duties at the rate of eight per cent. *ad valorem*.

Vessels employed for port services or for fishing are in all cases considered as Brazilian boats, even when they belong to foreigners.

For the time being—until January 4, 1917—the captains, masters, and one-half of the respective crews of steam or sailing vessels used for fishing may consist of foreigners, on condition that they undertake to submit their eventual legal proceedings to the Federal Courts.

[Extract from the *Diario Oficial*, n° 252, October 29, 1913.]

APPENDIX D

DIPLOMATIC REPRESENTATIVES.

(a) OF BRAZIL TO THE UNITED STATES OF AMERICA

Ambassador in New York—Dr. Domicio da Gama.

1st Secretary—J. de Oliveira Murinelly.

2nd Secretaries—J. F. de Barros Pimentel, J. J. Moniz de Aragão. Embassy 1013, 16th Street, New York.

Commercial Attaché—Dr. M. da Costa Barradas.

Naval Attaché—Radler de Aquino.

Consul-General in New York—G. Ferreira da Cunha.

Vice-Consul in New York—F. G. P. Leão.

Vice-Consuls are established at Baltimore, Boston, Brunswick, Calais, Charleston, Chicago, Fernandina, Gulfport, Mobile, New Orleans, Norfolk, Pascagoula, Pensacola, Philadelphia, Port Arthur, Richmond, St. Louis, San Francisco, Savannah, Wilmington, etc.

(b) OF THE UNITED STATES OF AMERICA TO BRAZIL

Ambassador in Rio de Janeiro—Edwin V. Morgan.

1st Secretary—G. B. Rives.

2nd Secretary—F. M. Gunther.

Military Attaché—Le Vert Coleman, Captain.

Consul-General in Rio de Janeiro—J. G. Lay.

Consuls (Bahia)—D. R. Birch; also at Pará, Pernambuco, Santos.

Consular Agents—Fortaleza, Maceió, Manáos, Maranhão, São Paulo, Rio Grande do Sol, and Victoria.

(c) OF BRAZIL IN GREAT BRITAIN

Envoy and Minister in London—Senhor Eduardo Lisboa.

1st Secretary—A. Guerra Duval.

2nd Secretary—Adolpho da Silva Gordo.

Military Attaché (vacant).

Naval Attaché—Captain Varella Quadros.

(Offices of Legation: 1 Halkin Street, London, S.W.)

Consul-General in London—F. Alves Vieira, Coventry House, South Place, E.C.

Consul-General in Liverpool—Lully José de Souza.

Consuls are established at Birmingham, Bradford, Bristol, Cowes, Dover, Falmouth, Hull, Leeds, Manchester, Newcastle, Plymouth, Portsmouth, Sheffield and Southampton in England; in Cardiff, Milford Haven, Newport and Swansea in Wales; in Dundee, Edinburgh, Glasgow and Leith in Scotland; and in Belfast, Cork, Dublin and Limerick in Ireland.

(d) OF GREAT BRITAIN IN BRAZIL

Envoy and Minister in Rio de Janeiro—Sir W. H. D. Haggard, K.C.M.G., C.B.

1st Secretary—Arnold Robertson.

2nd Secretary—H. S. Birch.

Military Attaché—Lieut.-Col. Sir Edward Grogan, Bart.

Naval Attaché—Capt. H. S. Grant, R.N.

Translator—L. A. H. Parish.

Consul-General in Rio de Janeiro—D. R. O'Sullivan-Beare.

Consuls are established in Bahia, Pará, Pernambuco, Porto Alegre, Rio Grande do Sul, and São Paulo; Vice-Consuls in Rio de Janeiro, Cuyabá, Morro-Velho, S. João del Rey, Victoria; Bahia and Aracujú; Pará, Manáos and Maranhão; Pernambuco, Ceará, Maceió, Parahyba, and Rio Grande do Norte; Uruguayana; S. Paulo, Curitybá, Florianopolis, Santos, S. Francisco, Fortaleza and Paranaguá.

COMMERCIAL TREATIES AND CONVENTIONS

BETWEEN BRAZIL AND THE UNITED STATES OF AMERICA

Amity, Commerce, and Navigation, 1828.

Extradition Treaty, 1897.

Trade Marks and Patents, 1878 and 8th February, 1911.

Convention—International Law Commission, 8th February, 1908.

Status of Naturalised Citizens, 16th January, 1909.

Pecuniary Claims Convention, 1st February, 1911.

Literary Convention, 15th February, 1911.

Arbitration Convention, 26th July, 1911.

BETWEEN BRAZIL AND THE UNITED KINGDOM

Navigation Convention, 31st July, 1867.

Convention—Consular Rights, Trade Marks, Deserters,
22nd April, 1873.

Extradition Treaty, 20th November, 1873.

Convention—Postal Union, 1878, 1885, 1891, 1897.

„ Protection of Industrial Property.

„ Arbitration, 18th June, 1909.

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